THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7328 and 7329

No. XIX. OF VOL. I., 1934. LONDON, SATURDAY, MAY 12, 1934 Pp. 120—Price 1s.

No 5776. Vol. CCXXVI. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s.

DISEASES OF THE THYROID GLAND

WITH SPECIAL REFERENCE TO THYROTOXICOSIS.

By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).

Crown 4to. Fully Illustrated. £3 3s. net.

"Mr. Joll has presented his fellow practitioners and students with a monumental volume. They need not trouble to search the literature published up to the time this volume went to press, for they will find everything relevant within its covers."
—BRITISH JOURNAL OF SURGERY.

William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

A CENTURY OF PUBLIC HEALTH IN BRITAIN 1832–1929.

By J. H. HARLEY WILLIAMS, M.D., D.P.H. 7s. 6d. net.

". . . a particularly useful survey of the social, legal, administrative and medical changes which have led up to and characterised the advance of State medicine during the last hundred years."—THE LANCET.

A. & C. Black Ltd., Soho-square, London. W.1.

FRACTURES.

By MEURICE SINCLAIR, C.M.G., M.B., CH.B. (EDIN.).

With an Introduction by Sir ROBERT JONES, Bt., F.R.C.S.

Pp. 550. 337 X-ray photographs, photographs and diagrams. 24s. net.

Constable & Co., Ltd., London.

THE TONSILS AND ADENOIDS

AND THEIR DISEASES: INCLUDING THE PART THEY PLAY IN SYSTEMIC DISEASES.

By IRWIN MOORE, M.B., C.M.

Demy 8vo. 395 pp. 107 Illustrations. Price 21s. net.

"On any question regarding tonsils and adenoids, this exhaustive work by Dr. Irwin Moore must be regarded as the final authority for many a long day to come."—PRACTITIONER.

"Provides an admirable guide, reliable and up to date, on the subject dealt with."—MEDICAL TIMES.

"Should be in the library of the medical student, general practitioner, and the consultant."—MEDICAL WORLD.

Wm. Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

By O. LEYTON, M.D., D.Sc., F.R.C.P., Physician to the London Hospital.

DIAGNOSIS AND TREATMENT OF DIABETES MELLITUS

FIFTH EDITION.

NOW READY. Price 6s. 6d. net. (Postage 3d.)

Adlard & Son, Limited, 21, Hart Street, London, W.C.1.

THE CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS.

Vols. I and II. Price 10s. 6d. each. Postage extra.

Volume I.—"Each of the 45 Sections included in the book is contributed by an experienced worker. . . ."

Volume II.—"We may say that the success of the first volume is here repeated. . . ."—BRITISH MEDICAL JOURNAL.

"Physicians and surgeons cannot afford to omit the knowledge here outlined. . . ."—BIRMINGHAM MEDICAL REVIEW.

London: THE LANCET LTD., 7, Adam-Street, Adelphi, W.C.2.

¶ "*This book should certainly make and keep for itself a place in urological literature.*"—LANCET.

UROLOGY IN WOMEN:

A HANDBOOK OF URINARY DISEASES IN THE FEMALE SEX.

By E. CATHERINE LEWIS, M.S. (Lond.), F.R.C.S. (Eng.). Surgeon to the Royal Free Hospital, Surgeon and Urologist to the South London Hospital for Women.

Size 6½ × 8½. Pp. viii + 73. With 4 Coloured Plates and 23 other Illustrations. Price 6s.; postage 5d.; abroad 9d.

Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2

A SELECTED LIST OF USEFUL BOOKS

PUBLISHED BY SAUNDERS

See Saunders' Advertisement on Page 5

BY KENNETH M. WALKER, F.R.C.S., M.A., M.B., B.C.

DISEASES OF THE MALE ORGANS OF GENERATION. Pp. 246. Coloured Plate and 78 Illustrations. 12s. 6d. net. (Oxford University Press.)

THE UNENLARGED PROSTATE. New and Enlarged Edition. Pp. 232. Coloured Plate and 62 Illustrations. Price 14s. net. (Oxford University Press.)

SEX DIFFICULTIES IN THE MALE. Second Edition. 5s. net. (Jonathan Cape.)

PREPARATION FOR MARRIAGE. 5s. net. (Jonathan Cape.)

With 16 Plates. Demy 8vo. 9s. net; postage 6d.

PYELOGRAPHY:

ITS HISTORY, TECHNIQUE, USES AND DANGERS.

By ALEX. B. ROCHE, M.A., M.D., M.Ch., F.R.C.S.

With an Introduction by SIR JOHN THOMSON-WALKER, F.R.C.S.

". . . will be of great use . . . . an up-to-date treatise."—B. M. JNL.

London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.1.

"Should be in the possession of every medical man."
—GLASGOW MEDICAL JOURNAL.

URINARY SURGERY.

A Handbook for the General Practitioner.

By W. K. IRWIN, M.D., F.R.C.S., Surgeon, St. Paul's Hospital for Genito-Urinary Diseases.

"Clearly written . . . furnishes the practitioner with information of great practical value in his everyday work."—BRIT. MED. JOUR.

SECOND EDITION. REVISED AND ENLARGED.

Price 10s. 6d. (postage 6d.)

Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2.

THE CONDUCT OF MEDICAL PRACTICE

BY

THE EDITOR OF "THE LANCET"

AND EXPERT COLLABORATORS.

Price 10s. 6d. net. Postage 6d. extra.

"The book is certainly comprehensive, and indeed may be described as complete."—BRITISH MEDICAL JOURNAL.

London: THE LANCET LTD., 7, Adam-street, Adelphi, W.C.2.

JOHN BALE, SONS & DANIELSSON, LTD.

The best practical handbook yet published.

MODERN BIRTH CONTROL METHODS or How to Avoid Pregnancy. By G. RYLEY SCOTT, F.Ph.S.(Eng.). With a Foreword by Sir W. Arbuthnot Lane, Bart., C.B. Post free 6s.

"We can thoroughly recommend this little book. . . . It is written with considerable knowledge and much skill."
—MEDICAL WORLD.

THE PRINCIPLES OF ANTE-NATAL AND POST-NATAL Child Hygiene. By W. M. FELDMAN, M.D., B.S., M.R.C.P. (Lond.), F.R.S.(Edin.). With 161 Illustrations and 14 Plates, including over 100 Portraits. 25s. net; post free 25s. 9d.

". . . a book which will interest alike paediatric physicians, lay workers at infant welfare centres, students of ante-natal care and welfare, and all concerned with the well-being of children. The general practitioner will find in it answers to the innumerable questions of young parents. . . ."—BRITISH MEDICAL JOURNAL.

THE SEXUAL LIFE OF MAN. An Outline for Students, Doctors, and Lawyers. By Dr. PLACZEK, Neurologist in Berlin. Second edition, considerably changed and enlarged. Translated by Leslie Stuart Morgan, M.R.C.S., L.R.C.P. 12s. 6d. net. post free 13s.

"If the practitioner's library does not contain one of the older works on this subject, then we strongly advise him to accord a place to this very excellent translation."—JNL. OF CLIN. RES.

A COMPENDIUM OF THE PHARMACOPŒIAS AND FORMULARIES (Official and Unofficial) with Practical Aids to Prescribing and Dispensing. By C. J. S. THOMPSON, M.B.E. Pp. ix + 381. Flexible leather, red edges, gold lettered. post free 11s. 3d.

A Handy Pocket Book of Reference for Medical Practitioners and Pharmacists. Seventh Edition, brought up to date and revised. With an Epitome of the Dangerous Drugs Acts, 1920 and 1923, and a Summary of Regulations affecting Pharmacists.

83-91, GREAT TITCHFIELD ST., LONDON, W.1

Elixir Bromo-Valerianate (Sabail)

exhibits a desirable sedative and soporific effect in all cases of

NERVOUS INSOMNIA

gently and safely inducing natural sleep without the attendant risk of the barbituric derivatives.

Samples on request

Soporific dose: Two tablespoonfuls at bedtime.

THE ANGLO-FRENCH DRUG CO. LTD., 11 & 12, Guilford Street, LONDON, W.C.1

LESLIES ZŌPLA STRAPPING
(Zinc Oxide Plaster)

Powerful grip—no slipping

Thoroughly pliable

Consistently good

Strong White and Flesh Cloths, White Felt, etc. Samples on request

ZŌPLA—BAND
(Elastic Plaster Bandage)

Excellent for varicose veins, ulcers, sprains, etc., and where an elastic cloth is desirable

All widths from 1 inch

Cream and Flesh colour

Manufactured by LESLIES LTD., High St., Walthamstow, London, E.17

Valentine's Meat-Juice

For **Quieting** the **Irritable Stomach** in **Pregnancy**, for **Rapidly Restoring** the **Vital Forces** in **Hemorrhage**, for **Sustaining** and **Strengthening** in **Long** and **Exhausting Labor**, **Valentine's Meat-Juice** is Extensively employed in

Obstetrical Practice.

Dr. M. DeCristoforis, *Prof. Lecturer on Midwifery and Gynæcology, Milan, Italy:* "The preparation, VALENTINE'S MEAT-JUICE, has been successfully used by me in a serious case of acute puerperal hemorrhage. The patient could take no food or drink. VALENTINE'S MEAT-JUICE was completely retained and restored very promptly the strength and the cardiac impulsion."

Dr. E. Duleroy, *Physician Accoucheur to the International Hospital, Paris, France:* "A young accouchée, in a very weak condition and suffering from stomach trouble, could retain no food, but was able to assimilate VALENTINE'S MEAT-JUICE given at first in small doses. An improvement was quickly visible, the patient recovered her strength and is today in good health."

For Sale by European and American Chemists and Druggists.

VALENTINE'S MEAT-JUICE COMPANY,
A 21 RICHMOND, VIRGINIA, U. S. A.

MAY 12, 1934

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 5776 LONDON, SATURDAY, MAY 12, 1934 CCXXVI

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

The Hormones and Their Chemical Relations. By Prof. E. C. DODDS, F.R.C.P.—(*Illustrated*) (*To be concluded*)..... 987

International Coöperation in Public Health: Its Achievements and Prospects. By Sir GEORGE S. BUCHANAN, F.R.C.P. 992

Diabetes Mellitus in Children. By LESLIE COLE, F.R.C.P.—(*Concluded*)..... 998

Pleuro-pulmonary Perforations: the Use of Gas Analysis in Their Diagnosis. By C. ALLAN BIRCH, M.R.C.P.—(*Illustrated*) 1002

Percentage of Fat in Human Milk. By M. F. LOWENFELD, M.R.C.S., S. T. WIDDOWS, B.Sc., and H. H. C. GREGORY, M.R.C.P. 1003

CLINICAL AND LABORATORY NOTES

Hey's Dislocation. By J. W. RIDDOCH, F.R.C.S. 997

A New Dual-action Principle in Tooth-extraction Forceps. By D. M. SHAW, L.D.S.—*Illustrated*) 1005

Secret Communications Made Visible. By F. W. MARTIN, M.D., and K. BEÖTHY, M.D.—(*Illustrated*) 1006

The Value of the Dick Test for Institutional Purposes. By R. M. BATES, F.R.C.S..... 1006

REVIEWS AND NOTICES OF BOOKS

The Anæmias. By Janet Vaughan, M.D. 1007

Biochemistry of Nitrogen Conservation. By Prof. G. J. Fowler, D.Sc..... 1007

Evolution of the Vertebral Column. By H. F. Gadow, M.A., F.R.S. Edited by J. F. Gaskell and H. L. H. H. Green 1008

The Behaviour of Animals. By E. S. Russell, D.Sc. 1008

Die Entzündung des Magens. By Dr. med. N. Henning 1008

The Dinosaurs. By W. E. Swinton, Ph.D. 1009

MEDICAL SOCIETIES

Society of Medical Officers of Health 1009

EUGENICS IN PRACTICE

I.—Mental Defect in the Community: Is It Increasing? 1011

LEADING ARTICLES

PATHOGENESIS OF MAMMARY CANCER 1013

THE ACTION OF LEAD ON THE KIDNEY 1014

TUBERCULOUS EMPYEMA . 1015

ANNOTATIONS

A Clinical Research Unit 1016

International Medicine .. 1015

Diabetes in Children ... 1016

Traumatic Shock 1016

The Extension of Life ... 1017

Retinal Abiotrophy..... 1017

Biology in the School Curriculum 1018

Veterinary Science and John Hunter 1018

An Empire Day Appeal.. 1019

Gastroscopy 1019

Child Guidance in America 1019

Treatment of Sexual Offenders 1020

PREVENTIVE ASPECTS OF MEDICINE

XXI.—Prevention of Venereal Diseases. By Col. L. W. HARRISON, F.R.C.P. 1024

THE SERVICES

Royal Naval Medical Service.—Army Medical Services.—Royal Army Medical Corps.—Indian Medical Service.—Royal Air Force.—Colonial Medical Service..... 1034

SPECIAL ARTICLES

Medicine and the Law: Drunkenness as Defence to Charge of Arson.—Aplastic Anæmia: Inquest on Cellulose Sprayer..... 1025

Paris: Goodwill as a Saleable Asset 1025

New Radiological Department at the Cancer Hospital.—(*Illustrated*) 1026

"Accredited Milk" 1028

PUBLIC HEALTH

The Pre-school Child: A Study in Nutrition.. 1029

Infectious Disease in England and Wales.... 1029

PANEL AND CONTRACT PRACTICE

An Apology for Rules and Regulations.—Contract Fees for Specialists.... 1030

CORRESPONDENCE

Tests for Motor Drivers (Sir E. Graham-Little, M.P.) 1031

Scope of Psychotherapy (Dr. J. R. Rees) 1031

Registration of Osteopaths (Mr. A. S. Blundell Bankart, F.R.C.S., Mr. W. A. Streeter) 1031

The Dosage of Œstrin (Dr. P. D. H. Chapman) 1032

Blood Transfusion in Gastric Hæmorrhage (Dr. H. A. Palmer).... 1033

Psychological Medicine at the New Post-graduate School (Dr. M. H. MacKeith)..... 1033

An Early Case of X Ray Dermatitis (Mr. J. O. Nichol, B.Sc.) 1033

A Disclaimer (Mr. L. Carnac Rivett, F.R.C.S.) 1034

The Selenide Treatment of Cancer 1034

Vaccination: the Modern View 1034

OBITUARY

James Haig Ferguson, F.R.C.P.—(*With portrait*) 1035

Prof. Alfred Richardson, F.R.C.S. 1036

PARLIAMENT

Notes on Current Topics: Lotteries and Hospital Finance.—Bills Advanced 1037

House of Commons: Coal-miners and Silicosis.—Sickness Benefit and Public Assistance.—Milk-borne Diseases 1037

MEDICAL NEWS

English Conjoint Board.. 1038

University of London.... 1039

University of Birmingham 1039

Royal Free Hospital 992

Hospital Waiting Lists .. 1004

St. Mary's Hospital, Paddington 1020

Medical Exhibition Centre 1030

West Kent Med.-Chir. Soc. 1036

Royal Medico-Psychological Association.... 1039

Epsom College 1039

Tuberculosis Scholarships in Rome 1039

London School of Hygiene and Tropical Medicine 1039

Roy. Coll. of Phys. of Edinburgh 1040

Medical Tour in Poland.. 1040

Research Fellowships in Tuberculosis..... 1040

Liverpool Psychiatric Clinic..... 1040

National Temperance Hospital..... 1040

Ladies' Medical Golfing Society 1040

Royal Photographic Society Exhibition 1040

Demonstrations of Contraceptive Technique 1042

NOTES, COMMENTS, AND ABSTRACTS

The Thyroid and Lymphatic Leukæmia..... 1042

Nests for Non-pregnant Rabbits..... 1042

Lewis's Catalogue of Books 1042

Veterinary Surgeons 1042

Medical Diary 1040

Appointments 1041

Vacancies 1041

Births, Marriages, Deaths 1041

THE LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY LIMITED

(FOUNDED 1892)

President: Sir JOHN ROSE BRADFORD, Bart., K.C.M.G., C.B., C.B.E., M.D., F.R.C.P., F.R.S.

Trustees for the Reserve Fund:

Rt. Hon. LORD DAWSON, P.C., G.C.V.O., K.C.B., M.D., P.R.C.P. Sir JOHN ROSE BRADFORD, Bart., K.C.M.G., C.B., C.B.E., M.D., F.R.C.P., F.R.S. Sir SQUIRE SPRIGGE, M.D., F.R.C.P., F.R.C.S.

The Society was founded for the following purposes: To protect, support, and safeguard the character and interests of legally qualified Medical and Dental Practitioners; to advise and assist Members of the Society in matters affecting their professional character and interests; and to indemnify them in regard to actions, etc., undertaken on their behalf.

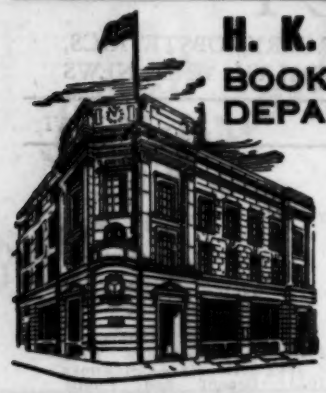
The Society is insured with Lloyd's Underwriters to an unlimited extent in respect of all adverse costs and damages awarded against Members in any action which the Society undertakes on their behalf.

Annual Subscription: £1. Entrance Fee: 10s. Assets exceed £60,000.

No entrance fee to those joining within 12 months of registration.

Full particulars and forms of application for membership from the Secretary, Victory House, Leicester Square, W.C.2.

Telephone: GERRARD 4814.



H. K. LEWIS & CO. Ltd., Publishers and Booksellers

BOOKSELLING DEPARTMENT } **TEXTBOOKS and Works in Medical, Surgical, and General Science. FOREIGN BOOKS.**

STATIONERY DEPARTMENT.—Special Stock of Medical Stationery, Card Index Systems, Filing Cabinets, Name Plates, Note Books, etc. Hand-painted Shields of the Arms of Universities, Hospitals, and Colleges. Students' Requisites.

MODELS DEPARTMENT.—Anatomical Models, Charts, Osteology, etc.

MEDICAL AND SCIENTIFIC LENDING LIBRARY.

Annual Subscription, from ONE GUINEA. *Prospectus on application.*

SECOND-HAND BOOKS DEPARTMENT: 140, GOWER ST., W.C.1

London: H. K. LEWIS & CO. LTD., 136 Gower Street, W.C.1.

Telegrams: "PUBLICAVIT, EUSROAD, LONDON." *Telephone:* MUSEUM 7756-7-8.

THIRD EDITION. *Fully Revised and Enlarged.* *Demy 8vo, 490 pp.*
With 250 Text Illustrations and 19 Plates (of which 8 are in colour). **20s.** *net; postage 9d.*

DISEASES OF THE

NOSE, THROAT AND EAR

FOR PRACTITIONERS AND STUDENTS

EDITED BY A. LOGAN TURNER, M.D., LL.D., F.R.C.S.E.,

Consulting Surgeon, Ear and Throat Department, Royal Infirmary, Edinburgh.

With the collaboration of

J. S. FRASER, M.B., F.R.C.S.E., W. T. GARDINER, M.C., M.B., F.R.C.S.E., J. D. LITHGOW, M.B., F.R.C.S.E., G. EWART MARTIN, M.B., F.R.C.S.E., and DOUGLAS GUTHRIE, M.D., F.R.C.S.E.

"The book is well balanced and clearly written, and may confidently be recommended for the use of students and practitioners."—LANCET.
"May be summed up in one word, 'scholarly'; it will prove of the greatest value."—JOURNAL OF LARYNGOLOGY AND OTOLOGY.

Bristol: JOHN WRIGHT & SONS LTD. *New Illustrated Catalogue free.* London: SIMPKIN MARSHALL LTD.

JUST PUBLISHED. **52nd Year.** **20s. net; postage 9d**

With 192 Text Illustrations and 69 Plain and Coloured Plates.

MEDICAL ANNUAL, 1934

A YEAR BOOK OF TREATMENT AND PRACTITIONER'S INDEX:

A Review of the Year's Progress in Medicine and Surgery, arranged in Alphabetical Order.

EDITORS: H. LETHEBY TIDY, M.A., M.D.Oxon., F.R.C.P., and A. RENDLE SHORT, M.D., B.S., B.Sc., F.R.C.S.

CONTRIBUTORS:

ABDOMINAL SURGERY: A. RENDLE SHORT, M.D., B.S., B.Sc., F.R.C.S.
ANÆSTHESIA: JOSEPH BLOMFIELD, O.B.E. B.A., M.D.Camb.
BLOOD DISEASES: STANLEY DAVIDSON, B.A., M.D., F.R.C.P.E.
BONES AND JOINTS, SURGERY OF: ERNEST W. HEY GROVES, M.S., M.D., D.Sc., F.R.C.S.
CHILDREN, MEDICAL DISEASES OF: REGINALD MILLER, M.D., F.R.C.P.
CHILDREN, SURGICAL DISEASES OF: JOHN FRASER, *M.C.*, M.D., F.R.C.S.E.
CHRONIC RHEUMATIC DISORDERS: VINCENT COATES, *M.C.*, M.A., M.D., M.R.C.P.
DIETETICS, PHARMACOLOGY, AND THERAPEUTICS: IVOR J. DAVIES, M.D., F.R.C.P.
EAR, NOSE, AND THROAT DISEASES: F. W. WATKYN-THOMAS, B.Ch.Cantab., F.R.C.S.
ENDOCRINOLOGY: W. LANGDON BROWN, M.A., M.D., F.R.C.P.
EYE DISEASES: Sir STEWART DUKE-ELDER, M.A., D.Sc., Ph.D., M.D., F.R.C.S.
GASTRO-INTESTINAL DISORDERS: ROBERT HUTCHISON, M.D., F.R.C.P.
GENITO-URINARY SURGERY: HAMILTON BAILEY, F.R.C.S.
GYNÆCOLOGY AND OBSTETRICS: BECKWITH WHITEHOUSE, M.S., Ch.M., F.R.C.S., F.C.O.G.
HEART AND BLOOD-VESSELS, DISEASES OF THE: A. G. GIBSON, M.A., M.D., B.Sc., F.R.C.P.
INFECTIOUS DISEASES, ACUTE: JOHN D. ROLLESTON, M.A., M.D.Oxon., F.R.C.P.Lond.
INSOMNIA: BERNARD HART, M.D., F.R.C.P.
MENTAL DISEASES AND PSYCHOLOGICAL MEDICINE: HENRY DEVINE, O.B.E., M.D., F.R.C.P.
NATIONAL HEALTH INSURANCE PRACTICE: E. KAYE LE FLEMING, M.A., M.D.
NERVOUS SYSTEM, DISEASES OF: MACDONALD CRITCHLEY, M.D., F.R.C.P.
NERVOUS SYSTEM, SURGERY OF: GEOFFREY JEFFERSON, M.S., F.R.C.S.
PUBLIC HEALTH AND FORENSIC MEDICINE: GEOFFREY E. OAKES, M.D., M.R.C.P., D.P.H., Barrister-at-Law.
RADIOLOGY: JAMES F. BRAILSFORD, M.D., M.R.C.S.
RADIUM TREATMENT OF CANCER: STANFORD CADE, F.R.C.S.
RENAL DISEASES AND UNDULANT FEVER: H. LETHEBY TIDY, M.A., M.D.Oxon., F.R.C.P.
RESPIRATORY TRACT, DISEASES OF: J. F. GASKELL, M.A., M.D., F.R.C.P., D.P.H.
SKIN DISEASES: A. M. H. GRAY, C.B.E., M.D., F.R.C.P., F.R.C.S.
STAMMERING: H. ST. JOHN RUMSEY, M.A.
SURGERY, GENERAL: Sir W. IRELAND DE COURCY WHEELER, M.D., F.R.C.S.I., F.A.C.S. (Hon.).
SURGERY, RECTAL: J. P. LOCKHART-MUMMERY, M.A., M.B., B.Ch., F.R.C.S.
THORACIC SURGERY: A. TUDOR EDWARDS, M.A., M.D., M.Ch., F.R.C.S.
TROPICAL DISEASES: Sir LEONARD ROGERS, K.C.S.I., C.I.E., M.D., F.R.C.P., F.R.C.S., F.R.S., Maj.-Gen. I.M.S. (retd.).
VENEREAL DISEASES: L. W. HARRISON D.S.O., M.B., Ch.B., F.R.C.P.E., Brevet-Col. R.A.M.C., and King's Hon. Physician (retd.)

"As a Year Book of Treatment it should be invaluable to the Practitioner who wants to keep abreast of modern developments; as a well-documented critical commentary on medicine and surgery it cannot fail to be of interest to the advanced student and the specialist."—BRITISH MEDICAL JOURNAL.

"In every department of medicine the review of the year's work has been kept up to date."—THE LANCET.

Bristol: JOHN WRIGHT & SONS LTD. (*New Illustrated Catalogue Free*) London: SIMPKIN MARSHALL LTD.

ADDRESSES AND ORIGINAL ARTICLES

THE HORMONES AND THEIR CHEMICAL RELATIONS*

By E. C. Dodds, M.V.O., M.D., D.Sc., F.R.C.P. Lond.

COURTAULD PROFESSOR OF BIOCHEMISTRY IN THE UNIVERSITY OF LONDON; DIRECTOR OF THE COURTAULD INSTITUTE OF BIOCHEMISTRY AT THE MIDDLESEX HOSPITAL

LECTURE II

Synthetic Compounds resembling Œstrin

The constitution of the œstrus-producing hormone and the pharmacologically active derivatives have already been discussed. As pointed out, the actual synthesis of the œstrin molecule is fraught with the very greatest difficulty, and it was decided to investigate the activity of synthetic organic compounds whose structure resembled in one direction or another that of œstrin (Cook and Dodds, 1933; Cook, Dodds, and Hewett, 1933; Cook, Dodds, Hewett, and Lawson, 1934; Cook, Dodds, and Greenwood, 1934).

Since œstrin contains a partly hydrogenated phenanthrene system containing oxygen groups, it seemed natural first to investigate simpler compounds of this type. Phenanthrene itself was found to be completely inactive, but the compound 1-keto-1 : 2 : 3 : 4-tetrahydro-phenanthrene was found to possess definite œstrogenic activity; this compound is represented by the formula shown in Fig. 7. When this is injected in doses of 100 mg. into castrated rats, it was found that within some 40 hours full œstrus had developed, including uterine changes. The œstrus is of very prolonged duration, lasting in some cases for 20 days. It would appear therefore that it is possible to reproduce all the known phenomena of œstrus in the rat and mouse with this compound. Moreover, when it is injected into immature female mice, premature puberty is induced. In the immature female rat and mouse the vagina is represented by a solid cord of cells which become canalised either at puberty or following the injection of œstrin. This keto-tetrahydro-phenanthrene compound is capable of causing canalisation of the vagina, and of inducing œstrus in these animals.

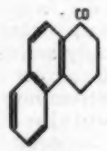


FIG. 7
1-Keto-1 : 2 : 3 : 4-tetrahydrophenanthrene.

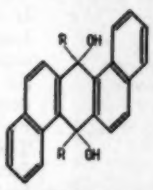


FIG. 8
Dibenzanthracene diols.

Another series of compounds have been very carefully studied and these include derivatives of 1 : 2 : 5 : 6-dibenzanthracene in which the ring-system is partly reduced and hydroxyl groups introduced.

It will be observed that the molecules of these substances are symmetrical, and that each half of the molecule is of the same type as 1-keto-1 : 2 : 3 : 4-tetrahydrophenanthrene. A series of diols having the general constitution 9 : 10-dihydroxy-9 : 10-dialkyl-9 : 10-dihydro-1 : 2 : 5 : 6-dibenzanthracene have been investigated; the graphic formula is seen in Fig. 8.

Now if the di-methyl compound be made, this, when injected, is without activity in doses of 100 mg. The di-ethyl compound, however, shows evidence of activity in doses as small as 1 mg. It is thus over 100 times as potent as the keto-tetrahydro-phenanthrene compound.

Ascending the alkyl series, we next encounter the di-*n*-propyl, and the activity of this compound is so great that 0·025 mg. will produce all the signs of œstrus in castrated rats. It is thus 40 times as active as the di-ethyl, and 4000 times as active as the phenanthrene compound. This substance is considerably more active than the tri-hydroxy-œstrin, which is one of the natural œstrus-producing agents.

Ascending the series still further we find the next homologue in di-*n*-butyl; this shows less activity than the di-*n*-propyl in that 0·1 mg. represents the effective unit. That is to say, it has about quarter the activity of the di-*n*-propyl compound.

Increasing the length of the side-chain shows that the di-*n*-amyl homologue is inactive, whilst the six-carbon atom side-chain in the next homologue, the di-*n*-hexyl, is also inactive. Table I. shows the relative activity of members of this series.

TABLE I.—*The Activity of Members of the Series*

9 : 10-dihydroxy-9 : 10-dialkyl-9 : 10-dihydro-1 : 2 : 5 : 6-dibenzanthracene.

Substance.	No. of animals.	Dose in mg.	Per cent. positive.	Remarks.
Di-methyl ..	Rats, 5	100	nil	—
Di-ethyl ..	,, 5	100	100	Œstrus lasted 13 days.
	,, 5	10	100	,, ,, 13 ,,
	,, 5	1·0	100	,, ,, 6 ,,
Di-*n*-propyl	,, 5	5	100	—
	,, 5	1·0	100	—
	,, 5	0·1	60	—
	,, 10	0·05	80	—
	,, 10	0·025	40	—
Di-*n*-butyl	,, 10	100	100	Œstrus lasted 28 days, animals then killed.
	,, 9	1·0	50	Œstrus lasted 48 hours.
	,, 14	0·1	50	,, ,, 36 ,,
	Mice 11	1·0	100	Animals in œstrus when killed on 10th day.
	Rats, 10	10	90	Suspension in water per os.
	,, 10	1·0	10	
Di-*n*-amyl ..	,, 5	100	nil	—
Di-*n*-hexyl ..	,, 3	100	nil	—
1-keto-1 : 2 : 3 : 4-tetrahydro-phenanthrene	Rats, 36	100	100	Œstrus lasted 20 days.
	,, 5	100	nil	Suspension in water administered per os.

This is a very instructive series, since it shows how the chemist can manufacture what might be termed a skeleton key with which to open the œstrus lock. The real key is ketohydroxy-œstrin, which is produced by the body. The skeleton key is the dibenzanthracene compound which we have indicated. By building up artificial teeth, so to speak, on the key, it is possible to open the lock with difficulty with the di-ethyl; but by putting on another tooth in the di-propyl, the lock slides back with ease, in fact, with just as much ease as with one of the real keys provided by nature. Another tooth in the di-butyl compound makes the key a little stiff, whilst yet another in the di-amyl makes it jam. It is also possible to show that these compounds, when administered, give an increase in the size of the uterus similar to that which occurs in natural œstrus.

In order to prove that the lock has been genuinely opened and not forced, it can be shown by a further series of experiments the effect of two of these compounds on the plumage of the capon (Cook, Dodds, and Greenwood, 1934). It is a well-known fact that the brown leghorn

* The Goulstonian lectures for 1934, delivered before the Royal College of Physicians of London on March 6th, 8th, and 13th. Lecture I. appeared in our last issue and Lecture III. will be published next week.

capon retains its male plumage, and if large doses of œstrin are injected subcutaneously into such a bird, the plumage changes from male to female. We were able to show that with two of these compounds—namely, 1-keto-1 : 2 : 3 : 4-tetrahydro-phenanthrene and 9 : 10-dihydroxy-9 : 10-di-*n*-butyl-9 : 10-dihydro-1 : 2 : 5 : 6-dibenzanthracene—even this lock was capable of responding to our synthetic key. Fig. 9 shows the effect on the plumage of injecting these compounds. The birds were brown leghorn capons whose plumage showed male characteristics. On injecting the compounds mentioned it can be seen that in the growing feathers there is a rapid change from the male to the female type. This is particularly well shown in feathers from the breast region. The markings in the illustration indicate the male and female areas in the feathers, but the striking character of these changes cannot of course be fully appreciated without coloured reproduction.

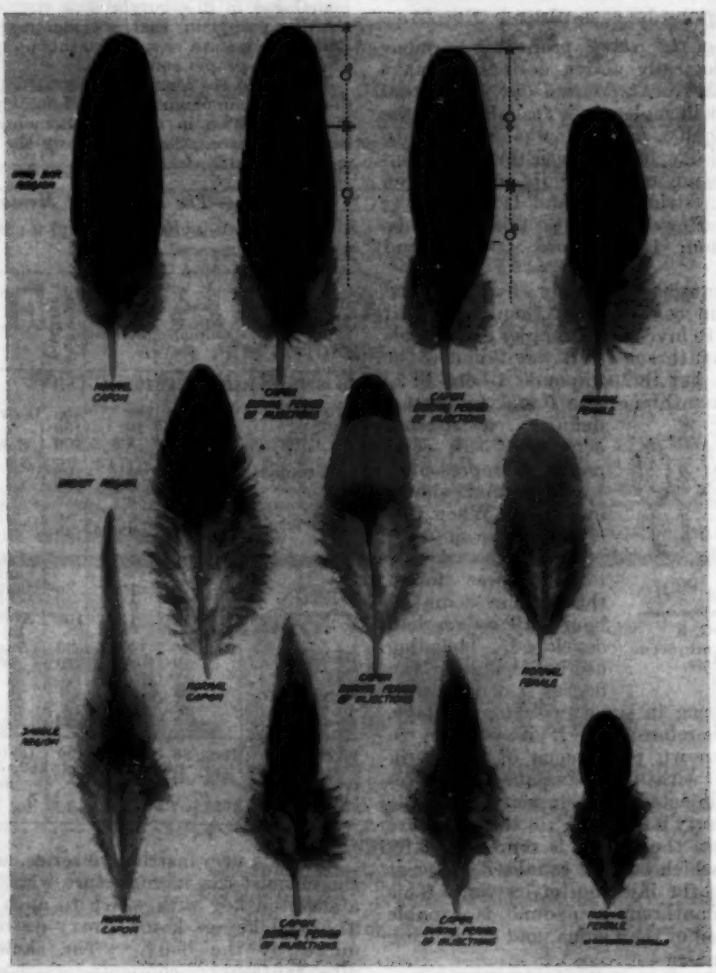


FIG. 9.—Effect of 1-Keto-1 : 2 : 3 : 4-tetrahydrophenanthrene on plumage of capons.

We can state, therefore, that, in so far as is known up to the present, these compounds possess all the known activity of the natural œstrus-producing hormone.

Specificity of Hormones

The significance of these observations is considerable, since they throw grave doubt on the question of specificity of hormones. The original conception postulated that hormone action was one of the most specific. Whilst it is known that para-hydroxy-phenols and their derivatives are capable of causing a slight rise of blood pressure, it would have been deemed incredible that so complicated a series of events as occur in the œstrus cycle could be initiated and maintained by any other than the naturally occurring hormone. Here, however, we see compounds of somewhat differing structures which are capable of reproducing the whole phenomenon, not only in mammals, but also in birds. It appears justifiable to assume that there are certain parts of the œstrin molecule which are necessary to reproduce the physiological activity, and that these compounds of ours also possess this.

The significance of this to the organic chemist is great, since it may mean that it is not necessary to synthesise the whole of the elaborate molecules that occur in nature, but that skeleton keys may possibly be found for many of the other hormones. At the present time it is impossible to state the exact groupings necessary in the substances for this activity. In all the active compounds the phenanthrene nucleus is to be seen. We now know, however, that even this is not essential, since we have found evidence of œstrogenic activity with the derivative of anthracene—namely, 1-keto-1 : 2 : 3 : 4 : 5 : 6 : 7 : 8-octa-hydro-anthracene—which is represented in Fig. 10. Research has been extended on these lines, and it is possible to state from unpublished data (Cook, Dodds, and Lawson) that definitely active anthracene derivatives may be obtained. The important factors seem to be a certain degree of unsaturation in a condensed carbon ring-system together with polar groups. These are probably necessary for a high order of activity, although definite activity of a low order was shown by some compounds which contain no oxygen. A great many compounds were tested with negative results.

These results provide a possible explanation for the very remarkable experiments carried out by Aschheim and Hohlweg (1933), who show that the extraction of a wide variety of bituminous substances is capable of yielding products with very definite œstrogenic activity.

Certain coals, mineral oils, &c. were used as starting material in the preparation of the œstrogenic substance. Aschheim and Hohlweg advanced the very attractive theory that this œstrogenic substance in coal was in effect that variety of the œstrus hormone that is known to be present in plants, and which was later called tokokinin. It has been shown that tokokinin has the same constitution

as keto-hydroxy-œstrin, and according to Aschheim and Hohlweg's ingenious theory, the œstrogenic activity of extracts from coal could be attributed to the tokokinin of primeval forests which had been preserved in the form of coal. In view, however, of our results it would appear that such an assumption is not necessary, since it is well known that extracts of coal will contain compounds of the same type of structure as those which have been proved to be capable of giving rise to œstrus. We ourselves have shown that certain of the ulmins of coal possess definite œstrogenic activity.

In order to complete a review of compounds capable of causing œstrus apart from the naturally occurring hormone, it is necessary to refer to the statement made by Coke (1930) that clupanodonic acid possesses marked œstrus-producing activity. Now this compound is a straight chain, unsaturated fatty acid obtained from certain fish oils. A very careful investigation has been made into this problem, but it has been found impossible to confirm the œstrus-producing activity of this compound. We were able, however, to demonstrate low-grade activity in certain highly unsaturated fatty acids of the general formula of clupanodonic acid.

This raises the very interesting possibility that perhaps the body possesses the power of converting the straight chain into a carbon ring compound. From the chemical point of view it has been proved that cyclisation of such a highly unsaturated compound does occur (Edisbury, Morton, and Lovern, 1933). As, however, the activity is so small, the other possibility—namely, that the fish oils contained a trace of œstrin which was not eliminated in the purification process—must be borne in mind. Up to the present, therefore, it is safe to say that all the synthetic œstrus-producing substances appear to belong to the condensed carbon ring system, and that the most powerful possess the phenanthrene nucleus.

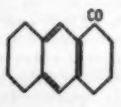


FIG. 10
1-Keto-1 : 2 : 3:4:5:6:7:8-octa-hydro-anthracene.

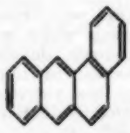
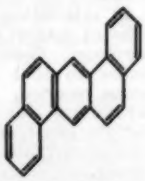
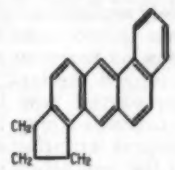


FIG. 11.—1 : 2-Benzanthracene.



1 : 2 : 5 : 6-Dibenz-anthracene

1 : 2-Benz-pyrene.



5 : 6-*cyclo*-Penteno-1 : 2-benzanthracene.

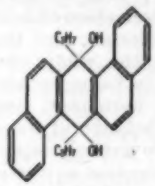


FIG. 12
9 : 10-Dihydroxy-9 : 10-di-*n*-propyl-9 : 10-dihydro-1 : 2 : 5 : 6-dibenzanthracene.

Carcinogenesis and Œstrogenesis

The hydrogenated phenanthrene ring type of compound, as already pointed out, has only recently been recognised as a normal constituent of the body. A list of the typical compounds of the body belonging to this group has been given earlier together with the structural formulæ. Mainly through the work of E. L. Kennaway and his co-workers at the Cancer Hospital, it has been proved that a carcinogenic agent present in tar also belongs to this particular type of chemical compound (Kennaway, 1924, 1925, 1930; Cook, Hieger, Kennaway, and Mayneord, 1932; Cook, 1932). It will here be necessary to consider the question of carcinogenesis in some detail.

The observations of industrial cancer led to the suspicion that tar was capable of producing malignant disease when applied to the skin. This was first proved by Yamagiwa and Ichikawa (1915, 1917, 1918) who, in 1915, were able to demonstrate experimentally that on application of tar to the skin of rabbits an epitheliomatous condition in a large proportion of cases resulted. Tsutsui (1918) repeated these experiments with mice in 1918, and this was confirmed by Passey in 1921 who used soot (Passey, 1922). It was found necessary to continue the experimental painting for very long periods, and nine months to a year was frequently necessary in order to produce a malignant tumour.

It was at first assumed that the tar acted by producing a chronic irritation which later became the subject of malignant change. Doubt, however, was cast on this view by the observation that not all tars were capable of causing malignant changes. In a very important investigation Kennaway (1924, 1925) showed that the carcinogenic agent could be produced by heating acetylene or isoprene in the presence of hydrogen. This proved conclusively that it was possible to obtain a carcinogenic agent which contained only carbon and hydrogen. Mayneord in 1927 studied the fluorescent spectrum of these synthetic mixtures, and observed the similarity of the spectrum to that of the carcinogenic tar. This work, which was continued by Hieger, suggested that the mixtures contained hydrocarbons of the polycyclic aromatic type. An investigation was at once commenced on the synthesis of a series of these compounds and a study of them from the point of view of their ability to produce carcinoma when painted on to the skin of mice. In a number of papers these workers (Cook, 1932; Cook, Hewett and Hieger, 1932; Cook, Hieger, Kennaway, and Mayneord, 1932) showed that a series of compounds related to 1 : 2-benzanthracene possessed carcinogenic properties. The only compounds of this series that we need consider at the present time are 1 : 2 : 5 : 6-dibenzanthracene, 1 : 2-benzpyrene, and 5 : 6-*cyclo*penteno-1 : 2-benzanthracene (Fig. 11). It can be seen at a glance that these carcinogenic compounds bear some resemblance to the group of substances that we discussed earlier.

The gradual elucidation of the structure of cholesterol, vitamin D, and the sex hormones has increased the theoretical importance of the work of Kennaway and his colleagues, since prior to these investigations it might have been argued that the production of tar cancer was of purely academic interest, as the carcinogenic agents apparently bore no relationship to substances taking part in the composition of the body. Their extensive investigations, however, have shown that the carcinogenic hydrocarbons belong to this form of condensed carbon ring compounds, and, as has been pointed out by Cook, the processes which would be entailed by the formation of these compounds from the naturally occurring sterols and bile acids would involve reduction, dehydration, and dehydrogenation, and might readily occur in the animal body; it seems possible that these carcinogenics might result from these processes operating upon degradation products of sterol metabolism (Cook, 1933).

The most potent synthetic œstrus-producing agent obtained by us is 9 : 10-dihydroxy-9 : 10-di-*n*-propyl-9 : 10-dihydro-1 : 2 : 5 : 6-dibenzanthracene which, it can be seen, is a derivative of 1 : 2 : 5 : 6-dibenzanthracene, the carcinogenic hydrocarbon (Fig. 12).

In view of the resemblance of the molecular structure of these two compounds, it was decided to investigate the carcinogenic hydrocarbons to see whether they possessed any œstrogenic activity. Accordingly a series of tests were made in which 1 : 2 : 5 : 6-dibenzanthracene, 1 : 2-benzpyrene, and 5 : 6-*cyclo*penteno-1 : 2-benzanthracene were used. With 1 : 2 : 5 : 6-dibenzanthracene completely negative results were obtained; but with the 1 : 2-benzpyrene and the 5 : 6-*cyclo*penteno-1 : 2-benzanthracene it was found possible to produce a full œstrus response by the injection of 100 mg. of the compound. The usual strict criteria for true œstrus was applied rigorously in these two instances, and the net results of these investigations establish the fact that these two compounds possess dual activity—namely, the power of carcinogenesis and œstrogenesis (Cook and Dodds, 1933). It must, however, be pointed out that the œstrogenic action, though definite, is only feeble, and that the main pharmacological action of these compounds lies in their carcinogenic powers. For example, the dibenzanthracene molecule is carcinogenic in the aromatic state, but œstrogenic when suitably hydrogenated and supplied with hydroxyl groups.

I believe that this is the first instance of the description of two entirely separate actions of a single molecule, and this again throws considerable doubt on the whole conception of hormone activity; not only have we already proved the lack of specificity of hormones, but have proved now that a single substance of known constitution may have at least two entirely separate actions initiating such differing processes as œstrus and the production of carcinoma. There is not at the moment sufficient evidence to warrant a great deal of speculation, but two possible thoughts arise to the mind: either the phenomena of œstrus and carcinoma are closely related or, alternatively, the carcinogenic hydrocarbons bear the same relationship to the production of cancer that the synthetic œstrus-producing agents bear to the œstrus phenomenon—namely, that they are both skeleton keys. It must be admitted that the excessive cellular proliferation occurring in the early stages of œstrus bears a superficial resemblance to certain phases of carcinoma.

Œstrogenic Activity of Vitamin D

As has already been mentioned, the condensed carbon ring group of compounds also includes vitamin D or calciferol. The vast amount of chemical work that has been pursued on this subject has shown that it is possible to take the inert sterol, ergosterol, and by irradiation with ultra-violet light under suitable conditions, to confer upon it the activity associated with vitamin D. By the application of chemical methods it has been possible to isolate in crystalline form the vitamin from the products of irradiation, but the exact constitution of this substance is not yet determined. The formula of ergosterol is shown in Fig. 13. From what is known of its constitution at the present time it can be seen that it is at any rate closely related to the group of compounds that we have discussed.

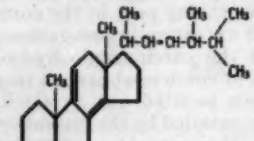


FIG. 13.—Ergosterol.

Bearing in mind the very remarkable observations on the dual activity of benzpyrene and 5 : 6-*cyclo*penteno-1 : 2-benzanthracene, it was felt that a careful trial of sterols related to ergosterol and calciferol for œstrus-producing activity would be interesting. Again, the same elaborate precautions were taken to be sure that any effects produced represented the whole of the œstrus phenomenon. The ovariectomised animals were injected with a solution of the sterol in oil, and 100 mg. were administered in each case. It was found that the greatest activity was possessed by neo-ergosterol; 40 per cent. of the animals injected with this compound developed full œstrus. In the case of calciferol full œstrus was developed in 20 per cent. of the animals, while with ergosterol 20 per cent. of the animals also showed definite evidence of œstrus-producing activity.

In all cases a number of animals were killed at the height of œstrus, and the characteristic enlargement and distention of the uterus was found. In the case of those injected with calciferol, the animals died at a later date with the characteristic symptoms of hypervitaminosis, but it must be emphasised that the œstrus changes occurred before there was any sign of intoxication. It must of course be borne in mind that the amount of calciferol required to produce œstrus is quite out of proportion to that required to protect an animal against rickets.

An interesting point was brought out by running a series of control animals which were injected with parathormone. These animals developed a hypercalcæmia similar to that obtained in hypervitaminosis, but no œstrus resulted. One can therefore definitely state that elevation of blood calcium does not produce œstrus, and that the œstrogenic activity of vitamin D appears to be quite apart from its power to raise the blood calcium content.

We have therefore a very striking confirmation of the observation that a single molecule may possess at least two entirely separate physiological effects, in this case antirachitic and œstrogenic activity. Until this observation was made this dual activity had only been observed with the synthetic carcinogenic hydrocarbons. In the case of vitamin D, however, we were able to reproduce the same phenomena with a naturally occurring substance. Again, it is too early to speculate upon the theoretical process underlying these surprising observations. It seems impossible to imagine that all these groups of compounds are converted in the body of the ovariectomised animal into œstrin, and there is certainly no evidence for such an assumption at the present time. In any case, these observations taken all together indicate the extreme importance of the

TABLE II.—*Relative Potencies of Sterols*

Substance.	No. of rats	Dose in mg.	Per cent. positive.	Remarks.	Method of Preparation.
5 : 6-*cyclo*penteno-1 : 2-benzanthracene ..	10	100	30	—	Cook (1931).
1 : 2-benzpyrene ..	10	100	30	—	Cook, Hewett, Hieger (1933).
Neo-ergosterol ..	10	100	40	—	Inhoffen (1932).
Calciferol	10	100	20	3 died.	—
Ergosterol	10	100	20	All died.	—
1 : 9-dimethyl-phenanthrene ..	5	100	60	—	Haworth and Mavin (1932).
Clupanodonic acid (after treatment with bromine)	5	50	50	1 died.	—
Coal ulmins	5	100	40	—	—

sterol group in the metabolism, not only of animals, but also of human beings. Whether the phenomena associated with rickets, malignant disease, and sex activity are all related, or whether all the locks are capable of being opened by skeleton keys, remains yet to be proved. It can be seen that in this particular sterol group there is no œstrogenic activity with cholesterol, but the potency increases with the increasing degree of unsaturation rising to a maximum in the case of neo-ergosterol. Table II. indicates the relative potencies of vitamin D, &c.

The Thyrotropic Hormone

It will be remembered that in Lecture I. the various hormones secreted by the anterior lobe of the pituitary were discussed, and amongst them appeared the thyrotropic hormone. It would seem that this hormone bears a very similar relationship to the thyroid to that which prolan bears to the ovary. We have already seen that prolan acts upon the ovary and stimulates it to produce œstrin and allied compounds. The thyrotropic hormone stimulates the thyroid to produce its own hormone, thyroxine. It will perhaps be advisable to review very briefly the experimental evidence of the existence of the thyrotropic hormone.

As in the case of prolan in relation to the ovary, the evidence produced by a study of cases of Simmonds's disease indicates the connexion between the anterior lobe of the pituitary and the thyroid gland. It has also been

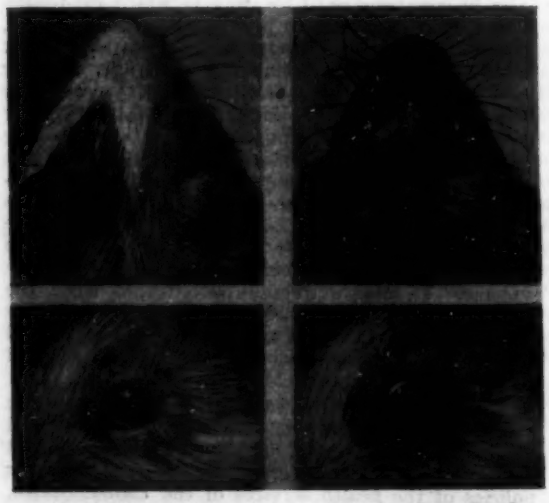


FIG. 14.—Exophthalmos in the guinea-pig. Reproduced from the *Bulletin* of the Johns Hopkins Hospital.

shown that removal of the pituitary gland causes either reduction of development or atrophy of the thyroid (Adler, 1914; Allen, 1916: Smith, 1916; Foster and Smith, 1926; Smith, 1927; Richter and Wislocki, 1930). Several of these observers noted the decrease in basal metabolic rate, and Foster and Smith (1926) and also Richter and Wislocki (1930) noted that the changes can be prevented by injection of an extract of the anterior lobe. Moreover, the addition of an extract of the anterior lobe of the pituitary to the fluid in which axolotls are kept initiates a metamorphosis. The metamorphosis is preceded by hyperplasia of the thyroid gland.

In 1929 Max Aron published an account of the action of an extract of the anterior lobe of the hypophysis upon the thyroid of the guinea-pig. In a later series of papers in 1930 he reported a very careful study of this hormone and showed that there was great hypertrophy of the parenchyma of the gland associated with liquefaction and final disappearance of the colloid; if the injections be discontinued the thyroid gland returns to its normal state (Aron, 1929 and 1930[1 2]).

Krogh, Lindberg, and Okkels (1932) made a very careful histological investigation of the thyroids of guinea-pigs following prolonged treatment with anterior lobe extract; they maintained that whilst the glands gave the appearance of having returned to normal after cessation of injections, it was found that the Golgi apparatus still showed the hyperplasia in increase which is characteristic of Graves's disease.

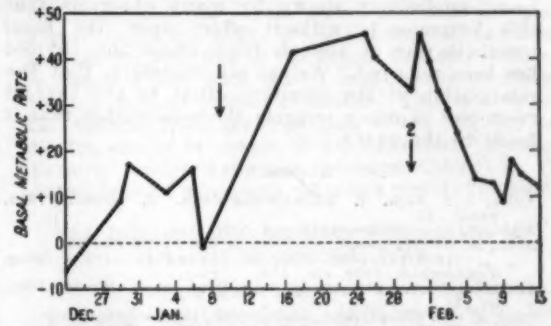


FIG. 15.—Chart showing effect of thyrotropic hormone on the basal metabolic rate of a woman (age 27). Administration of the hormone, in doses of 600 mouse units daily, was begun at the point marked 1 (Jan. 9th) and was stopped at 2 (Jan. 30th).

Some of the first observers to study the effects of the hormone upon the basal metabolic rate of animals were Verzár and Wahl (1931). They showed that it is possible to increase the basal metabolic rate to a very considerable level and that this falls on withdrawing the extract. They further made the interesting observation that this rise in basal metabolic rate could be controlled by the administration of potassium iodide. It was also found impossible to produce hyperactivity of the thyroid in an animal receiving large doses of potassium iodide. This observation was also made independently in my laboratory.

It is very interesting to compare this phenomenon with the well-known effect of iodine in reducing the high basal metabolic rate in persons with thyrotoxicosis. In general it may be stated that the increase in basal metabolic rate is directly dependent upon the amount injected.

A still further effect of this hormone is the production of exophthalmos in animals. This has been successfully demonstrated by Hogben (1922–23) and by Spaul (1923–24); it has also been observed in ducks and guinea-pigs by Schockaert (1931[1 2] and 1932) and by Loeb and Friedman (1931–32.) The following illustration is reproduced from a paper by Friedgood (1934) and shows very clearly the marked exophthalmos occurring in a guinea-pig (Fig. 14.)

It would appear that here we have an experimental method of producing Graves's disease, and as in the case of Graves's disease the condition can be controlled by the administration of iodine.

With regard to the chemical properties of the extract, very little at present is known. It is apparently of a protein character and is readily destroyed by heat and in alkaline solution. It seems, therefore, to belong to the protein group and to correspond in properties roughly with hormones such as prolan and insulin. The accompaning chart shows a typical experiment made in my laboratory upon a volunteer with this material (Fig. 15).

Guinea-pigs were used for the animal experiments and their oxygen consumption was measured by a modified Krogh apparatus.

I have made a very careful study of the urine of patients suffering from Graves's disease and thyrotoxicosis in the hope of finding a hormone in the urine in the same manner that one finds prolan in the case of pregnancy, but so far no conclusive evidence has been obtained. By a modification of the method of Dickens (1930) for the separation of prolan, it was possible to obtain definite though small yields of a thyrotropic substance. It has, of course, been conclusively shown by many observers that this hormone is without effect upon the basal metabolic rate of animals from whom the thyroid has been removed. We can see, therefore, that the relationship of the pituitary gland to the thyroid resembles in many respects the relationship that it holds to the ovary.

REFERENCES

Adler, L.: Arch. f. Entwicklungsmech. d. Organ., 1914, xxxix., 21.
Allen, B. M.: Science, 1916, n.s., xliv., 755.
Aron, M. (1929): Compt. rend Soc. de biol., 1929, cii., 682.
" " (1930): (1) Ibid., 1930, ciii., 145 and 148; (2) Rev. franç. d'endocrinol., 1930, viii., 472.
Aschheim, S., and Hohlweg, W.: Deut. med. Woch., 1933, lix., 12.
Coke, E. C.: Compt. rend. Soc. de biol., 1930, cv., 251.
Cook, J. W. (1931): Jour. Chem. Soc., 1931, p. 2529.
" " (1932): Proc. Roy. Soc. B., 1932, cxi., 485.
" " (1933): Ibid., 1933, cxiii., 273.
" " Hewett, C., and Hieger, I. (1932): Nature, 1932, cxxx., 926.
Cook, Hewett, and Hieger (1933): Jour. Chem. Soc., 1933, p. 395.
Cook, Hieger, Kennaway, E. L., and Mayneord, W. V.: Proc. Roy. Soc. B., 1932, cxi., 455.
Cook and Dodds, E. C.: Nature, 1933, cxxxi., 205.
Cook, Dodds, and Hewett: Ibid., 1933, cxxxi., 56.
Cook, Dodds, and Greenwood, A. W.: Proc. Roy. Soc. B., 1934, cxiv., 286.
Cook, Dodds, Hewett, and Lawson, W.: Ibid., 1934, cxiv., 272.
Dickens, F.: Biochem. Jour., 1930, xxiv., 1507.
Edisbury, J. R., Morton, R. A., and Lovern, J. A.: Ibid., 1933, xxvii., 1451.
Foster, G. L., and Smith, P. E.: Jour. Amer. Med. Assoc., 1926, lxxxvii., 2151.
Friedgood, H. B.: Johns Hopkins Hosp. Bull., 1934, liv., 48.
Haworth, R. D., and Mavin, C. R.: Jour. Chem. Soc., 1932, p. 2721.
Hogben, L.: Proc. Roy. Soc. B., 1922–23, xciv., 204.
Inhoffen, H. H. (1932): Liebigs Ann., 1932, cdxcvii., 130.
Kennaway, E. L. (1924): Jour. Path and Bact., 1924, xxvii, 233.
" " (1925): Brit. Med. Jour., 1925, ii., 1.
" " (1930): Biochem. Jour., 1930, xxiv., 497.
Krogh, M., Lindberg, A. L., and Okkels, H.: Acta path. et microbiol. Scand., 1932, ix., 37.
Loeb, L., and Friedman, H.: Proc. Soc. Exper. Biol. and Med., 1931–1932, xxix., 648.
Passey, R. D.: Brit. Med. Jour., 1922, ii., 1112.
Richter, C. P., and Wislocki, G. B: Amer. Jour. Physiol., 1930, xcv., 481.
Schockaert, J. A. (1931): (1) Proc. Soc. Exper. Biol. and Med., 1931, xxix., 306; (2) Arch. internat. de pharm. et de thérap., 1931, xli., 23.
Schockaert (1932): Amer. Jour. Anat., 1932, xlix., 379.
Smith, P. E. (1916): Science, 1916, n.s., xliv., 280.
Smith (1927): Jour. Amer. Med. Assoc., 1927, lxxxviii, 158.
Spaul, E. A.: Brit. Jour. Exper. Biol., 1923–24, i., 313.
Tsutsui: Jann, 1918, xii., 17–21 (in Japanese).
Verzár, F., and Wahl, V.: Biochem. Zeits., 1931, ccxl., 37.
Yamagiwa and Ichikawa (1915): Mitt. d. med. Fakult. d. Kaiser. Univ. zu Tokyo, 1915, xv., 295.
Yamagiwa and Ichikawa (1917): Ibid., 1917, xvii., 19.
" " (1918): Ibid., 1918, xix., 483.

ROYAL FREE HOSPITAL.—At the annual meeting recently, Lord Riddell, the president, stated that during the past year an average of 1000 patients had been treated daily, including 100 children in the Eastman Dental Clinic. The nurses' home had been completed at a cost of about £150,000; two new wards were opened for ear, nose, and throat cases, with 30 beds and a theatre; the pay beds have been increased to 23. The Albert Levy wing at the Queen Mary building, comprising an obstetric and gynæcological out-patients' department and an electrotherapeutic and massage department, has been brought into full operation. Patients' dietaries have been revised to bring them into accord with modern ideas. Sir Hilton Young, Minister of Health, congratulated the governors upon the mortality in the maternity wards being only 2·8 per 1000, "the lowest in London, and possibly in the whole country."

INTERNATIONAL COÖPERATION IN PUBLIC HEALTH

ITS ACHIEVEMENTS AND PROSPECTS *

BY Sir GEORGE S. BUCHANAN, C.B., M.D., F.R.C.P. Lond.

The International Sanitary Convention, 1926

AFTER the war, as I have already shown, the impulse to establishment of greater confidence between countries was growing, while it had to be realised that the latest convention, though as recent as 1912, now related to a pre-war political geography that was extinct, and to States whose governments as well as whose frontiers had been radically changed. Meanwhile, also, a good deal more had been learned from the war years about international coöperation over infectious diseases, and it was clear that if any general new convention was made it could no longer be limited to cholera, plague, and yellow fever. Several countries had, for example, adopted a policy of their own to control the entry of typhus and small-pox infection at their sea or land frontiers, and action in regard to these two diseases at least required some mutual understanding in the interests of traffic and of rational hygiene. We were in great difficulties also in consequence of the way in which rat plague had spread from port to port by means of shipping, often causing human plague and, in any case, great expense in its eradication. The danger was being met by efficient methods of effectively destroying rats, particularly by cyanide fumigation, but shipping was finding itself in the impossible position of having to submit to deratisation and all the delay and cost that it involved, at one port after another, undertaken merely because the vessel had originally come from an infected country, and without regard to the previous deratisations or fumigations to which she might have been subjected in course of the same voyage. It may well be supposed that when the fumigation of a ship on which there was no evidence of any plague infection was found to cost several hundreds of pounds without producing a single dead rat, the owners became eloquent.

The difficulties of amending the 1912 Convention and adjusting it to new conditions, political and medical, were very great. Nothing could have seemed more contradictory, for example, than the post-war policies of the health services of the United States, Japan, and Great Britain on many of the questions at issue. Indeed, at one time it seemed likely that no new world-wide agreement would be possible, and that the whole matter would have to be left to particular agreements negotiated between countries or to regional agreements. This view was strongly contested by countries like our own with a large world trade, and fortunately with good effect. The convention which at present regulates all these matters—the International Sanitary Convention of Paris, 1926—drawn up by a plenipotentiary conference working on the drafts prepared by the Office International d'Hygiène publique—is world-wide in its application, and was able to be so by its being based on the adoption of new principles of international coöperation. The rat difficulty, for example,

* The Milroy Lectures delivered before the Royal College of Physicians of London on Feb. 27th and March 1st, 1934, with a few subsequent additions of detail.

was met with by establishing the now well-known international system under which all ships are liable to examination every six months at designated ports, in order to ascertain whether they are rat-infested and should or should not be deratised. Then, again, the several infections were no longer dealt with collectively but each according to the natural history of the disease. For "infected ship" we substituted "plague-infected ship," cholera-infected ship, and so on. Next, the whole system of intercommunication between countries in regard to the prevalence of infectious diseases was altered. While diplomatic communications were preserved for certain purposes, it was the technical office in Paris which was then made directly responsible for the receipt and dissemination of the necessary information to the health departments of the signatory countries. It was here that the links with the Singapore Bureau and the Pan-American Sanitary Bureau, already described, became important.

The Office International was made responsible also for many other duties, such as the coördination of the sanitary control of the Mecca Pilgrimage, the promotion of subsidiary local agreements, and generally for a continued supervision over the way in which the Convention worked in practice. This function it has fulfilled conscientiously and thoroughly by means of a standing Quarantine Commission which meets during its half-yearly sessions, and gives its opinion for transmission to governments on any anomalies which are brought to its notice and on any matters of practice which are not defined in the Convention but require a common understanding. At recent sessions, for example, the Quarantine Commission has dealt with the standards which should be adopted for the fumigation of ships by cyanide, or sulphur, with the abolition of the aged but unvenerated requirement that ships should carry and produce bills of health in relation to the ports from which they have come, with measures for facilitating direct communication between port medical officers of adjoining countries, with the international codes of flags, signals, and wireless which are required for public health purposes, and many other relative questions. Their findings on these matters are often only arrived at after discussion at two or three sessions, during which the delegates have been in position to ascertain the views of their own governments and consult their experts; but when arrived at they have never to my knowledge been seriously questioned, and are now very widely adopted and govern the ordinary practice of port sanitary authorities

We are, of course, far from having achieved finality by the International Sanitary Convention, 1926, but it may safely be asserted that its prescriptions, when subject to constant practical consideration and revision in the way which is effected in Paris, have within the last few years almost metamorphosed the practice of port sanitary administration for the better. One anomaly after another has been removed, in each case with the object on the one hand of strengthening the national sanitary authorities in their real task of disease prevention, and on the other of saving transport and shipping from useless and unnecessary interference. The Paris Office in this matter has, I believe, come to possess the confidence both of the public health departments and the shipping interests of the maritime countries. All this, I may add, is exemplified in the changes which have been made in our own system of port sanitary administration in the United Kingdom since 1926, during which time we have given close attention at the Ministry of Health and in the Departments of Health for Scotland and Northern Ireland to the equipment and working of our port administration on the lines internationally agreed to. In recently amending and consolidating the port sanitary regulations made under national legislation in the United Kingdom, the various requirements of the Convention have received due recognition. Their working, as I have indicated, is dependent on the system by which the intelligence we obtain about infectious diseases abroad under the terms of the Convention, and also through the activities of the British Consular Service, is classified and made readily and rapidly available to port medical officers of health. This is done in the Medical Intelligence section of the Ministry of Health, chiefly by means of a confidential "Weekly Record," designed by my colleague Colonel S. P. James, which I venture to claim as a model of its kind.

The International Sanitary Convention for Aerial Navigation, 1933

The experience gained in preparing the International Sanitary Convention, 1926, encouraged the Paris Office a little later to take up a proposition originally made by the Italian representative at the time of the Peace Conference—namely, that international rules should be established in respect of the precautions to be taken to prevent the transmission of infectious disease by aircraft. At first sight this object seemed one which could be attained by enunciating a few simple and general principles. While international air traffic did undoubtedly add a new route by which infection could be carried, the number of passengers was infinitesimal in relation to those going by sea, and, relatively speaking, they were well-to-do and responsible people. The parallel case seemed rather to be that of international journeys by train and road, for which a few simple rules, chiefly in the direction of securing the maximum of liberty and non-interference with merchandise, had sufficed. But it soon became evident that something more was wanted. The opening up of long air routes, from the East in particular, was held by certain countries which are always apprehensive of the importation of cholera—e.g., Egypt or Persia—to require the imposition on arrivals by aircraft of the same measures which had been so lately settled in Paris for arrivals by ship. Thus, passengers coming from infected or suspected countries like India were to be made liable to detention at the aerodrome, say, in Persia or in Egypt, pending the results of bacteriological examination of their stools, and special requirements were being prescribed in respect of place of landing of the aircraft itself and the movement of its crew.

Another and troublesome demand arose for evidence of the health of the places from which the aircraft had come, which took the form of expecting air traffic to be complicated with the same system of bills of health which had proved such an irksome and profitless formality in the case of shipping. In fact, we were up against several of the old questions of unnecessary and irritating measures which were not warranted by the actual risks.

There was, however, another side to it. The introduction of air traffic in certain cases has actually created a new kind of risk of introduction of infection by reason of the rapidity of air flights from distant countries. The public health authorities were within their rights and, indeed, only performing an obvious duty when they were taking measures to protect

themselves against these risks. The questions, internationally, were what form the action should take, how to define it in terms of maximum measures, and how to secure a reasonable uniformity which would enable the air lines to know what was expected of them. The case with which we were principally concerned was that of yellow fever, less perhaps in respect of the existing air lines than of those which sooner or later are sure to be established between the yellow fever infected countries in Africa to other parts of that continent. Such lines are already in operation in the New World when the countries of yellow fever prevalence are traversed. The yellow fever danger, in the absence of control, was accordingly represented as being a very formidable one, seeing that all the conditions, including the presence of stegomyia, which promote the spread of yellow fever infection were present in the uninfected eastern part of Africa, and that India and other countries farther to the East, where the same position obtained, had the gravest apprehensions about the introduction by air of a disease which, on account of its natural history and methods of spread, was believed hitherto never to have gained access to their populations.

Fortunately, however, the case was one in which the establishment and observance of an agreed code of action should go a long way to the removal of any legitimate apprehensions on this ground. The key of the position was that the number of aerodromes at which countries permit arrivals from other countries is very small, for customs and political reasons. Hence there are few centres to control and at most of them access to medical services is feasible. So that, given an aerodrome used for international flight which is in a region where yellow fever exists, it is usually quite a practicable thing to keep that aerodrome and its personnel free from infection. And as to mosquitoes, it is fortunately not difficult to secure their destruction in passenger aircraft. And finally, in order to obviate the risk of the flight of passengers who have quite recently been infected and who might be able during the six days thereafter to infect stegomyia in a susceptible country, the problem is no greater than those which are constantly dealt with by any medical officer of health for other diseases. It resolves itself into medical examination and inquiry into recent movements of the passenger at those particular aerodromes where the possibility of yellow fever infection has to be considered—i.e., those which, by reason of the greater euphony of the French name, we have termed "Anti-Amaryl Aerodromes." This can, if need be, be supplemented by observation of the passenger until the end of the six-day period.

By degrees and after several sessions, and always in close consultation with representatives of air navigation, the Committee of the Office found itself therefore in a position to supplement the International Sanitary Convention, 1926, which deals with sea and land transport, by the International Sanitary Convention for Aerial Navigation, which was opened for signature at The Hague in April, 1933, and has already been signed on behalf of many important countries and their possessions. The code is sufficiently comprehensive to be applicable to American air routes, as well as to the Old World; and subject to the completion of a technical reservation, which gives no difficulty, this Convention is to be signed by the United States. It should be added that the Second Pan-American conference of Directors of Health also assisted the Office International by giving consideration and approval to the text.

Looking to the great importance attached to the yellow fever aspect of the question in West Africa and the East, it is satisfactory to note that its universal acceptance by states, dominions, and colonies in the Continent of Africa has already nearly been achieved. For this result, special recognition is due to the initiative of the Government of the Union of South Africa, which secured a conference on this and other subjects at the end of 1932 and went into the question in all its bearings. In this, the coöperation of the Health Organisation of the League of Nations proved most useful, since they not only accepted the request of the Union to convene the conference but also were represented by Dr. Park and myself as Secretary and President respectively.

Other International Health Conventions: the Brussels Agreement, 1924

The international conventions and agreements on health questions which may come before the Paris Office are by no means limited to quarantine. The Royal College of Physicians has a particular interest in one such agreement—that which settles the International List of Causes of Death (which owes much to the help given to the British delegation by our former President, Sir Humphry Rolleston) and has to be related to the Nomenclature of Diseases for which the College is responsible. But as the position of the Paris Office to that agreement is not one of direct responsibility, I will choose another example—namely, the Brussels Agreement of 1924—using a few notes from my colleague, Dr. M. T. Morgan, who in future will represent the United Kingdom on the Permanent Committee of the Paris Office, and has also been included by that committee among its nominees to the Health Committee at Geneva.

Many of us will remember our apprehensions of increase in venereal disease after demobilisation, and especially the fear we had of the introduction of severe types of syphilis from eastern and other foreign countries on the resumption of normal sea traffic. To meet this apprehension special care was taken in the United Kingdom to augment the number and increase the efficiency of our State-subsidised venereal disease clinics, and more than ordinary attention was given to this provision in our seaports. At our venereal disease clinics it has always been the practice to give the same facilities to the foreigner and to the foreign seaman as to our own nationals. But this practice was far from being general or reciprocal in all parts of the world, and we had evidence that in several ports overseas the incidence of venereal disease was very high, and that British seamen were contracting these diseases there without being treated, and were introducing the infection on their return to home ports. In these circumstances I was instructed to raise the question before the Permanent Committee of the Paris Office in the spring of 1920, and the discussions which then began ultimately materialised in an international agreement respecting facilities to be given to merchant seamen for the treatment of venereal diseases, which was signed at Brussels on Dec. 21st, 1924. This agreement, therefore, has been in operation for over nine years. It has been ratified by 16 countries, including some of the principal maritime nations of the world, and received the adherence of 24 Governments, who apply it although they have not gone through the formality of ratification. To these should be added other countries who, rather inconveniently, are not signatory, but conform fairly closely to the scheme

of the Agreement. This document consists of seven articles, by which the signatory countries undertake to establish and maintain in each of their principal sea or river ports services for the treatment of venereal disease open to all merchant seamen or watermen without distinction of nationality, such services comprising modern treatment. The supply of medical necessaries, and treatment in hospital should the doctor of the service consider it essential, are to be free of charge, as also are necessary medical supplies to enable treatment to be followed on the voyage to the next port of call.

It is part of the system that each patient receives a card following an official international model which is strictly personal to himself and on which he is designated by a number only. This card records diagnosis, treatment carried out at the various centres, and the results of serological and other special examinations. Masters of ships and shipowners are to make known to the crews the existence of the services, and similar action is to be taken by port sanitary authorities. A list of the ports at which the system is working was lately published by the Paris Office and covers some 750 seaports. At the instance of the Ministry of Health this list of centres at ports at home and abroad has been distributed to our own port clinics for venereal diseases, and, through the instrumentality of the Board of Trade and shipowners, copies are also made available to seamen on British ships.

The whole system has worked well and there can be no doubt that it has not only done a good deal for the merchant seaman himself, but has checked the spread of infection among the population generally. The Paris Office last year made inquiries of all the Governments concerned in regard to the practical working of this agreement and the directions in which improvements might be desirable. It was clear from the replies that the international system is by now well known to sailors, who frequently ask for information about these centres and expect to obtain treatment there. At certain ports, however, some additional measures are needed to make the facilities better known. At other ports arrangements still have to be made for the relatively rare cases in which it is necessary to detain the seaman in hospital. Experience also suggests that certain alterations in the form of the seaman's personal card would be useful. All these details are now receiving fresh attention; I draw attention to them as an example of the special advantage of the Paris Office as a means of securing that international agreements and conventions are duly applied in practice, or revised when experience brings out some new factor which had not been taken into account when the agreement was made. There are, I believe, many international agreements on other subjects which would be in a healthier state if this principle was applied to them.

General Work of the Office International d'Hygiène Publique

It can hardly be supposed that the delegates from the health departments of over 50 countries could meet for ten days in the spring and again in the autumn and limit themselves to discussing the terms of diplomatic agreements and supervision of their application, however necessary these things may be. The fascination—I use the word advisedly—of these meetings is the use of them which has grown up, particularly under the guidance of our late President, M. Velghe, to communicate and exchange information about the particular happenings which are troubling a particular country to-day, but may well affect its neighbour to-morrow, or of which another neighbour may have special experience. One introduces, for example, the characteristics of the small-pox we have had epidemic in England during recent years; with its copious rash and classic beginnings fading off almost without fever, pustulation or pitting, and with a practically negligible mortality even in the unvaccinated. This brings out experience of "alastrim" elsewhere; it leads after one or two sessions to an understanding of the nature and geographical extent of what we now agree to call "variola minor," to the understanding that it can coexist with variola major, and presently to the adoption of these two terms in official nomenclature—incidentally to our own great convenience, administratively, in this country. We got these conclusions in this particular case because one member of the Committee, Prof. Ricardo Jorge of Lisbon, was willing to give his time and unrivalled epidemiological acumen to a survey of the world data, and prepare a report for us. Prof. Jorge has rendered us many such services, as have Dr. Jitta, Dr. Lutratio, Dr. Hamel, Dr. Tsurumi, the late Prof. Cantacuzène, and the representatives of the French and Belgian Colonial health services—it is, indeed, invidious to mention names, since one member after another takes up the particular burden for the common good. *Proximus ardet;* when Dr. Madsen tells us of epidemic myalgia, under the name of "Bornholm disease," in Denmark, we start looking for it in other Scandinavian countries, or in Poland, in Germany or England, and bring the results to the next session. The early inquiry into undulant fever in England, made for the Ministry of Health by Sir W. Dalrymple-Champneys in 1929, was the result of communications which I brought home from Paris, which showed how necessary it was to look out for this disease in Northern Europe. There have been many such.

Sometimes common action needs to be concerted between delegates although a formal agreement is recognised to be undesirable—this has been the case with the European prohibition of the importation of parrots since the psittacosis of 1929–30. If we were to stop the movements of parrots from country to country—and it was necessary—we had to act together in Europe. In this country we were at first some weeks behind other countries, and were running a definite risk of being swamped by possibly infected parrots which were denied their usual markets on the Continent. I hope that the European countries will continue to pool all their information on this subject if the Paris Office should recommend—the matter is not yet settled—that universal prohibition is no longer necessary; unfortunately it is not only with parrots that the removal of a restriction is more difficult than its original imposition.

I should end my note about the work of the International Office of Public Health in Paris by a reference to the review of its 25 years of activity, presented to us by the Director of the Office in October.[1] For all the work I have described and for much more we depend on the Director of the Office, Dr. Abt, and his deputy, M. Marignac, and the small competent personnel through whom all the regular intelligence functions of the Office under the Conventions are carried out. They have also the really considerable credit of that unique monthly publication, the Bulletin Mensuel de l'Office International

[1] Vingt-cinq ans d'activité de l'office international d'Hygiène publique, 1909–33. Par Dr. Georges Abt. Published at 195, Boulevard St. Germain. 1933.

d'Hygiène publique. This bulletin is authoritative as regards public health laws and regulations in different countries; it now reproduces all the chief contributions made or presented by the delegates at the sessions, and adds abstracts and reviews selected for their international value.

A word must also be said here to recognise the accuracy with which this small staff deals with documents in many languages and presents them in the official language of the Office, which is French. This goes far, though obviously not far enough for English-speaking people, to compensate for the absence from our Paris meetings of the bilingual system of the League of Nations, in which there are two official languages—French and English. An English edition of the Bulletin Mensuel, if funds allowed, would certainly be of very great advantage.

Some Concluding Observations on the International Health Organisations, and British participation

I feel, in conclusion, that, notwithstanding the description I have given of the working of the organisations at Geneva and at Paris, I may still be asked a familiar question—namely, whether it is necessary that public health and medical work which is so essentially dependent on Governments and their Health Departments, should continue to be conducted in two capitals by two committees and two secretariats.

Another occasion must be taken to discuss the advantages and disadvantages of reviving and revising the Assembly project of Dec., 1920, mentioned at the beginning of these lectures—taking account of the special lines on which each of these international organs has developed, and the strength which each of them has gained, since that date. New international discussions and new conclusions on this subject will be required sooner or later. But meanwhile, from the point of view of those who participate in the work, the duplication, such as it is, gives relatively little trouble. And the advantages of the two organs functioning side by side each in the directions which I have mentioned are so great, that it is hardly desirable to raise constitutional questions about their mutual relationship unless or until some new and strong reason arises to disturb the present order of things. Objections may be made to the scheme of creation which gives us a left hand as well as a right, and there are occasional drawbacks from the right hand not knowing what the left is doing. At the same time it is our general experience that, given a good directing brain, we get on with two hands better than with one.

There are in this connexion some *imperial and domestic considerations* worth a moment's further review. No one could take part, as I have done, in the many official conferences, in the preparation of international conventions, or in the discussions at these international health offices, without realising how naturally they come to assist the mutual understanding and helpfulness of the English-speaking peoples, and here, with experience of the way in which the great public health service of the United States, under the epoch-making direction of Surgeon-General Cumming, has responded to every call for international effort, it is right to add the U.S.A. and the British Commonwealth of Nations together. It is not that the English-speaking peoples combine against those of Latin or other nationalities—in several ways the American and Australian methods are much closer to those of other countries than they are to the United Kingdom—but it comes about from the language, and also the fact of possessing similar basic traditions of health administration, legislation, and medical practice.

Australia, Canada, New Zealand, the Union of South Africa, the Irish Free State, the Sudan, are all countries which adhere to the Rome Convention, 1907, and are represented by their own delegates at the Paris Office. In one or two cases where distance makes it inconvenient for the Dominion to send a representative from its health service, the Ministry of Health has been invited to permit one of its medical officers to act for and report to the Dominion Government. This practice has been found mutually convenient, particularly as it has put at the disposal of the Office International medical officers with such special experience as is possessed by my colleagues, Colonel S. P. James, the representative of New Zealand, on all tropical medicine questions, and by Colonel P. G. Stock (who was formerly Director of Medical Services in South Africa) on matters of quarantine.

Indian participation again has from the first been of great importance, seeing that it is on Indian information that we have so much to rely when we are dealing with major epidemic diseases such as cholera, plague, and severe small-pox. Until 1929 there was no separate representation for the British colonies, but the creation of the office of Medical Adviser at the Colonial Office naturally carried with it direct representation of the colonies by Dr. Stanton, which has since been continued. The results of the international work are now communicated to the public health services of practically all British colonies and dependencies and countries under British mandate, and every endeavour is made to bring British colonial problems which would help or benefit from international discussion before the Paris Committee—an endeavour which corresponds with that of the numerous colonial and overseas possessions of other countries, notably France, Belgium, and Holland. The coördination or mutual understanding of health work between adjoining colonies of different nationalities, which is so often needed, particularly in Africa, can thus be helped centrally as well as locally. On the League of Nations Health Committee also, though British Empire representation is less complete, the Indian Medical Service has been represented almost from the beginning, while most of the Dominions at one time or another have had a member drawn from their health services.

It is thus not difficult to understand how these international meetings bring together the public health services of the English-speaking nations in a way which would not otherwise be achieved. We come almost of necessity to establish a personal relationship with fellow-workers overseas which is invaluable as a time-saver when dealing with common problems.

One might even go further in enumerating the advantages of international coöperation by referring to our domestic arrangements. British representation at, and the chief work connected with, these offices naturally falls on the Ministry of Health. In this respect that Ministry inherits, through the Local Government Board, the traditions of the medical department of the Privy Council. It is to the Ministry of Health, and its medical service, that the home Government looks in the first instance for advice on questions of health policy affecting its relations with foreign countries, and through the Ministry that necessary liaisons with other departments are maintained.

But representation of His Majesty's Government in administrative matters concerning health naturally entails consultation by the Ministry of Health with many other government offices at all stages, and the making of reports which have to go to many different quarters if the representative is properly to do his business; in particular, if we are to pull our weight, the association with the Medical Research Council and its many committees and research workers must be specially close. In all these matters, what is done through these official international health offices is only half done if it is just treated as belonging to a remote corner of some one department, labelled "international," and only remembered, if at all, when a difficulty has arisen.

A delegate or member of these international committees develops, of course, a kind of special sense as to the administrative bearings of the questions with which they deal, and he may bring to the international council a special personal competence on some one subject on which he is an authority. But for most things he asks for nothing better than the position of a trusted intermediary. As an agent, he wishes to occupy a normal place in the national public health machinery, he wants others to feed him—even to overfeed him—with material to take to and bring back from the international sessions and discussions. The pleasure of the work—and I have found it a great pleasure—is its measure of the confidence and willing help of one's colleagues, in one's own department, and in all sections of the public service, given for the common benefit.

I should refer in this connexion to a useful practice by which the programme of work at Geneva and Paris is communicated to and discussed generally at the Ministry of Health with medical officers from the Medical Research Council, the Departments of Health for Scotland and for Northern Ireland, and the British Colonies, by means of a medical committee over which my colleague, Dr. T. Carnwath, now presides. The helpfulness of this arrangement can hardly be exaggerated, particularly since the ultimate output needs to be dealt with also in the same way. I must add also a word about the value of our consultations with the London School of Hygiene and Tropical Medicine, which itself has been placed in direct association with the Medical Director and Health Section at Geneva for a number of purposes, including, as I explained above, the arrangements for the reception and guidance of visitors from overseas who desire to study particular British questions. As the work which I have described goes on from strength to strength, as I think it must do, other means may be devised by which its nature and results become more used and better known than they are at present by public health officers and the medical profession generally, for example, by securing some closer association of them by our great medical colleges and universities.

HEY'S DISLOCATION

By J. W. Riddoch, *M.C.*, M.B., F.R.C.S. Edin.
HON. SURGEON, MIDLAND HOSPITAL, BIRMINGHAM

Posterior dislocation of the proximal phalanx at the metacarpo-phalangeal joint of the thumb has drawn on itself a certain amount of notoriety owing to the fact that it is frequently impossible to reduce by ordinary manipulation. There have been several factors put forward as the cause or causes of this difficulty in reduction, such as:—

1. The head of the metacarpal being caught between (*a*) the flexor pollicis brevis and the adductor pollicis; (*b*) the two heads of the flexor pollicis brevis.

2. The tendon of the flexor pollicis longus winding itself round the neck of the metacarpal.

3. The volar accessory ligament being torn from its proximal attachment to the metacarpal, and being interposed between the bones.

The last-mentioned factor finds most general acceptance and the treatment recommended is the tenotomising of the volar accessory ligament through a puncture on the dorsal aspect of the joint.

A CASE DESCRIBED

A recent case is of interest as it was dealt with by open operation.

J. W., a girl of 7, was admitted to hospital on Sept. 2nd, 1933, after falling on the right hand. Reduction was attempted under an anæsthetic in the casualty department, but failed. On the 4th another anæsthetic was given and attempted reduction was again unsuccessful. A posterior incision was then made on the radial side of the extensor tendons and the joint opened. The dislocation of the phalanx was typical, the displacement being towards the ulnar side as well as backwards.

The volar accessory ligament had been torn from its proximal attachment and passed backwards over the base of the phalanx, its free end lying in the posterior part of the joint. Manipulation with the joint open failed, but when the ligament was pushed forward the dislocation was easily reduced, and showed no tendency to redisplacement. When the dislocation was reproduced the ligament again passed back between the joint surfaces.

REMARKS

Assuming, as is the general opinion, that the mechanism demonstrated above is the cause of the difficulty in these cases, I find it difficult to understand how tenotomy can be carried out without doing damage to structures in front of the joint, if indeed it can be carried out at all on a structure which is not on the stretch. The tenotome would have to be used fairly forcibly to be sure of piercing the volar ligament, and it would be very liable to penetrate the long flexor of the thumb. Probably the essential happening, when this procedure is carried out, is that the ligament is pushed forward out of the way, and this enables reduction to be carried out by manipulation.

In view of the damage that is liable to be done to the joint surfaces as well as other structures by a sharp instrument, it would probably be better to confine the use of the tenotome to the opening of the joint, and then to introduce some blunt instrument such as the flattened end of a Cheyne's dissector to push forward the ligament preparatory to manipulation.

Bath Mineral Water Hospital.—Last year there were 1115 admissions. This is a small decrease due, the annual report thinks, to the increased facilities in many towns, especially in London, for the out-patient treatment of rheumatism in its early stages. Each patient stayed on an average 43·2 days. The establishment of a school of massage is under consideration.

DIABETES MELLITUS IN CHILDREN

By Leslie Cole, M.D. Camb., F.R.C.P. Lond.

PHYSICIAN TO ADDENBROOKE'S HOSPITAL, CAMBRIDGE; UNIVERSITY TEACHER IN MEDICINE

(*Concluded from p. 950.*)

TREATMENT

Method of standardisation.—All patients are admitted to hospital as soon as possible after the diagnosis has been made and usually on the day of their first attendance. Starvation or severe restriction of diet have not been employed, except in the cases which were admitted before 1927. On admission, patients have usually been placed on a diet containing one-third to one-half of the caloric requirements for the age, the carbohydrate not exceeding 40 g. Lawrence's [16] line ration scheme (5-gramme carbohydrate lines) is used in arranging this diet. In most patients a small dose of insulin is given from the start, and this is gradually increased until the 24-hourly specimen of urine is sugar-free and the blood-sugar is within normal limits. This takes from one to four weeks and during this time the patient is kept entirely in bed. During this period any focal sepsis is treated if the patient is sufficiently fit. When the blood-sugar is consistently normal and the urine is sugar-free, the diet and insulin are increased gradually. The carbohydrate has not, as a rule, been increased at this stage to more than 80–100 g. During this stage the patient is allowed to get up. When the blood-sugar is consistently normal and the 24-hourly specimen is sugar-free on the fuller diet the patient is encouraged to be as active as possible about the ward, and if any slight symptoms of hypoglycæmia develop or the blood-sugar readings are consistently too low, the dose of insulin is reduced. Before discharge the insulin is reduced slightly because when children are leading a more active life at home they almost always require less insulin than in hospital. If septic foci have been eradicated at the beginning of treatment a greater reduction is made to allow for the late recovery from the effects of sepsis on the islet tissue. Even with this reduction it is sometimes found that further reduction of the dose is required during the first few months as an out-patient. Patients are usually kept in hospital for from one to two months. To shorten this period is undesirable and usually leads to more difficulty later on and the necessity for readmission. In hospital the details and working of the diet are explained to the parents and they are taught to measure and inject insulin. Children over 10 who are sufficiently intelligent are taught to measure and inject their own insulin. Some are taught to test their own urine for sugar.

After discharge they attend as out-patients every two months. Urines are tested and blood-sugar is estimated, and adjustments made in diet and insulin. Patients who are now taking more than 100 g. of carbohydrate have had the additional amount added during the last three years, usually after they have been taking the lower amount for a year or more. In a few of the more recent cases higher figures have been given (Cases 3, 7, 16, and 18) after the first month of treatment, but it is still too early to say how far this is satisfactory. One of these developed an infection after six months and the diet has since had to be reduced.

Energy requirements.—Adults require food for maintenance and activity. Children require in addition food for growth and to compensate for their relatively greater heat loss. This additional requirement is large. Lawrence's figures for normal children of different ages are as follows:—

Under 1 year	100	6– 9 years	70–60
1–2 years	90–80	10–13 years	60–50
2–5 years	80–70	14–17 years	50–40

calories per kg.

Although the aim has been to give diets approximating to the normal in order to ensure normal growth and activity, this is often difficult, owing to the severity of the disease in children, even if a very large dose of insulin is given. In most of the more severe cases it has proved impossible, or inadvisable, to give the theoretical caloric requirement either because the disease is so severe that with such a diet it is impossible to keep the blood-sugar even near the normal limits or because children have been growing and living normally on a low diet and have been definitely less fit when it was increased. In these latter it is remarkable how nearly normal they have remained both in growth and activity.

The relative proportions of protein, fat, and carbohydrate in the diet is a subject upon which different views are held. At one end of the scale the ratio of ketogenic and antiketogenic substances is determined [17] by the formula $F = 2C + \frac{1}{2}P$. The advent of insulin however made it at once possible to give a more liberal allowance of carbohydrate. Of recent years good results have been obtained with a far higher proportion than had previously been thought possible. Rabinowitch [18] showed that in a series of cases a diet such as C. 50, P. 50, F. 150 (1750 calories) could be changed to one of C. 236, P. 73, F. 56 (1736 calories). In seven out of ten cases the change made a reduction of insulin possible. Short,[19] Poulton,[20] and others have also used diets of this type and for the comparatively short period for which they have been tried have found them satisfactory. The diabetic is able to tolerate these larger amounts of carbohydrate probably because of their stimulating action on the secretion of insulin by the remaining healthy islet tissue. Macleod [21] has shown that in healthy human subjects a greater fall of blood-sugar follows small doses of insulin plus glucose than follows the same amount of insulin alone. How exactly this is brought about is not yet quite clear, but from the evidence afforded by cross-circulation experiments he considers that the secretory activity of the islet tissue is under the control of the vagus centre and that this is stimulated by an increased concentration of glucose in the blood.

In most of the cases recorded above the carbohydrate has been increased during the last three years in amounts varying between 30 and 60 g. and in some there has also been a reduction in fat. The results have been generally satisfactory, particularly in that the patients have felt fitter and have been less liable to mild attacks of hypoglycæmia. To attain this increase no corresponding increase in insulin has been necessary in the less severe cases. In the very severe cases of long duration (such as Cases 2, 4, 5, and 6) it has not been found possible to increase the carbohydrate above 110 g. In the milder cases the diet can be varied considerably on the same dose of insulin without any corresponding change being observed in the blood-sugar readings or urine analyses.

In practice no hard-and-fast rule has been followed either as to the total calories given or the relative proportions of the different elements. The figures given by Lawrence for total caloric requirements

have been used as a rough guide only, being modified according to the requirements and progress of the individual. The amount of carbohydrate has been varied according to the severity of the case, the stability of the blood and urine findings, the liability to hypoglycæmia and the sense of well-being, activity, and growth of the patient. Broadly speaking, all these considerations are best met with a diet containing between 90 and 110 g. of carbohydrate in very severe cases and between 120 and 200 g. in less severe ones.

PROGRESS

The progress of the disease is very difficult to estimate and this is particularly so in children whose food requirements are constantly changing. Infections too are a very disturbing factor in estimating progress. A mild infection such as a slight cold or an infected tooth undoubtedly has a considerable effect on the efficiency of the remaining islet tissue. If standardisation of diet and insulin is carried out with such infection present or before the results of an infection have quite passed off there may be considerable apparent improvement when such effects do pass off.

Case 7 shows this early recovery very clearly.

On admission he was on the verge of coma. He had had symptoms of diabetes for a few weeks and had scalded his foot four days before admission. The scald was a slight one and did not appear to be septic, and there was no evidence of any other infection. His blood-sugar was 0·4. In the first 24 hours he received fluids containing 80 g. of glucose and 85 units of insulin. His progress is seen in Table I.

TABLE I.—*Treatment in Case 7*

Diet.—April 14th to 17th: Fluids; 60 g. glucose. April 18th to May 24th: C. 80, P. 60, F. 120.

Date in 1933.	Units insulin.	Urine (24 hr.). Sugar (no acetone).	Blood-sugar.	Date in 1933.	Units insulin.	Urine (24 hr.). Sugar (no acetone).	Blood-sugar.
April				April			
14	60	+	0·11	30–			
15	30	0	..	May			
16	36	+	..	2	30	T.	..
17	36	+	0·16	3	20	0	0·04
18	45	+	..	3–10	20	0	May 6 0·05
19	45	+	..				
20	40	+	0·08	11	20	0	(6 A.M.) 0·14 0·09
21–24	40	+	..				
25	40	+	0·13	13	20	0	0·08
27	40	+	(6 A.M.) 0·18	15	10	0	..
			(10 A.M.) 0·06	17	10	0	0·07
28	40	0	0·06	20	N.	0	0·08
29	40	0	0·06	24	N.	0	0·09

N. = none. T. = trace.

This patient was finally sent out on C. 200, P. 60, F. 80, and 20 units daily. On this his resting blood-sugar has remained below 0·1, and his 24-hourly specimen has not contained more than a slight trace of sugar.

This patient might have been standardised on a smaller amount of carbohydrate and no insulin, but he is probably safer on a larger diet and this dose of insulin if he develops any infection. The liability of children to sudden increased loss of tolerance when an infection develops makes treatment without insulin, even in mild cases, extremely risky, and it should never be attempted.

Case 8 is another example of early improvement.

In March 1931 this patient was admitted on the verge of coma and was standardised on C. 45, P. 45, and F. 90, and 15 and 10 units of insulin daily. At this time three very septic teeth were removed. During the next six months the insulin was steadily reduced on account of hypoglycæmic attacks and in August it was stopped entirely. In September he had a relapse and began to pass sugar again, and was readmitted in October with a blood-sugar of 0·26. He was discharged on a diet of C. 85, P. 60, F. 110, and 12 units of insulin twice a day, which during the next few months was reduced to 11 units b.d. In May 1933 the diet was again increased to C. 160, P. 72, F. 120, and no further increase of insulin was found to be necessary, the urine remaining sugar-free, and on nearly all occasions the blood-sugar within normal limits. In this case the great recovery during the first six months of treatment was probably partly due to the beneficial effects of insulin and partly to the removal of focal sepsis.

If every infection could be treated under hospital conditions its effects might be less, but unfortunately in this series this has often not been possible. The following are examples of the progress of the disease:—

Case 12.—Three weeks after the first symptoms appeared the resting blood-sugar was 0·26 per cent. (For further details, see case notes.) She was then standardised on a diet of carbohydrate 85, protein 45, and fat 90, and six units of insulin twice a day. During the next 18 months the resting blood-sugar varied between 0·04 and 0·12 (one reading of 0·18 per cent.). The 24-hourly specimen was generally sugar-free, but occasionally showed a trace of sugar. To maintain the blood-sugar at this level the insulin had to be increased gradually to 10 units twice a day. At the end of this period she developed a severe cold with bronchitis, and for a short time had a high blood-sugar, glycosuria, and severe ketosis. At the age of 5 she was readmitted and restandardised on a diet of C. 90, P. 50, and F. 45 (on account of ketosis), and 24 units of insulin daily. This child is now 7 and, although the diet has been increased to C. 110, P. 60, and F. 120, she still only needs the same dose of insulin to keep the blood-sugar between 0·03 and 0·09 per cent. Her progress may be tabulated as follows:—

	Diet.	Insulin.	Weight.
Age 3.	C. 85, P. 45, F. 90, Cal. 1400	6 b.d.–10 b.d.	.. 1 st. 11 lb.
,, 4½.	Infection with severe relapse of diabetes.		
,, 5.	C. 90, P. 50, F. 45, Cal. 985	12 b.d.	.. 2 st. 9 lb.
,, 7.	C. 110, P. 60, F. 120, Cal. 1500	12 b.d.	.. 3 st. 5 lb.

Case 9, after she had been treated for 18 months, was standardised at the age of 9 on C. 90, P. 56, F. 105, Cal. 1575, and 25 and 20 units of insulin daily. Weight 4 st. At the age of 11 she was taking C. 102, P. 60, F. 105, Cal. 1640, and 20 units of insulin twice a day. Weight 5 st. 3 lb.

Progress may be summarised as follows. The onset of symptoms is acute over a period of a few days or weeks. Sometimes the parents think they can state accurately the day on which the symptoms began. How long the disease may be latent before symptoms appear it is difficult to say. Within a few days or weeks of the onset of symptoms there is a great degree of impaired sugar tolerance and ketosis, which is often made very much greater by the development of an infection. If the disease is then controlled with diet and insulin there is considerable improvement of carbohydrate tolerance, and if there happens to be an infection present and this subsides or a septic focus is removed there is even more improvement. This improvement is particularly marked if treatment is begun soon after the onset. After one or two years of insulin treatment, although it is often possible to increase the diet with growth and increase the amount of carbohydrate given without increasing the insulin, there does not seem to be recovery in any of these cases to the extent that insulin can be stopped or even reduced very much. On the other hand, the occurrence of further infections or of failure to control the disease

with insulin usually leads to further permanent loss of tolerance.

INFLUENCE OF INFECTIONS

The severe effects of acute or chronic infection in the course of the disease are well known, and their frequency in childhood makes management more difficult than in the adult. In the present series this has been shown again and again. Every severe exacerbation in an established diabetic was associated with some infection, and the rise in blood- and urine-sugar and ketosis with even a slight cold is remarkable. This effect is well shown by Case 13 who, while in hospital, developed an acute bronchitis of moderate severity (see Figure) and by Case 16.

An acute infection is nearly always the cause of diabetic coma. The risk, however, of coma developing in a diabetic child is comparatively slight, provided that the dose of insulin is not reduced. Chronic infections as in adults also have a bad effect on the disease and it is of the utmost importance that, if these are present, they should be dealt with early in treatment. It should be remembered that the effect of infection probably persists for some considerable time after it has apparently subsided or a focus has been eradicated, and allowance made for this during standardisation.

BLOOD-SUGAR DURING TREATMENT

An increased amount of glucose in the blood is a stimulus to the secretion of insulin, and in order that what remains of normal islet tissue may not be over-stimulated the blood-sugar should be kept within normal limits all the time. In children this ideal is difficult to achieve, particularly if the doses of insulin are limited to two daily, because the blood-sugar level is controlled by so many variable factors. These are chiefly activity and infections. There is also the variation in strength of different samples of insulin and apart from gross diet delinquences, the slighter variations which must inevitably occur, at any rate in out-patients of this class. Even when children are under strict supervision in hospital there is often an unaccountable variation in the blood-sugar, and this is usually most marked in children during the early months of insulin treatment. In the more severe cases it is difficult to prevent a rise of blood-sugar in the early hours of the morning before the first dose of insulin is given.

Blood-sugars of out-patients are taken between two and three hours after breakfast, and in most this reading can be kept within the limits of normal (0·06–0·12). Apart from the incidence of infections many children remain steady year after year. In others the story is very different, and to steer a course between hypoglycæmic attacks on the one hand, and readings of 0·2 per cent. on the other, seems impossible. This cannot be entirely attributed to carelessness over diet and insulin for it occurs with patients in hospital under strict supervision. Case 13, after being an in-patient on a constant diet and insulin dosage for three weeks, had the following blood-sugar readings on six successive days, two hours after breakfast: 0·04, 0·05, 0·22, 0·15, 0·25, and 0·07. In some patients in whom control is difficult the choice lies between a very strict régime with rather curtailed activities and a normal blood-sugar and no glycosuria; and a normal life with a fuller diet, a raised blood-sugar, and frequent glycosuria. In such a case, I think the latter course is preferable. Patients often feel and appear very much better on a freer diet, even though it means occasional glycosuria and a raised blood-sugar. The risk is that the effects of a raised blood-sugar on such processes as arterio-sclerosis and cataract are not yet known.

GLYCOSURIA DURING TREATMENT

In these patients the aim has been to keep the 24-hourly specimen completely free from sugar. This ideal has rarely been attained. Many patients pass only an occasional slight trace of sugar and remain sugar-free for long periods, in others the urine frequently contains small amounts of sugar. The latter are usually sugar-free after the first dose of insulin in the morning until late at night or early in the following morning when the pre-insulin rise in the blood-sugar occurs. A few cases are still more difficult and at times pass considerable amounts of sugar at other periods of the day. Here again, if they feel perfectly well and are able to live a normal life as is usually the case, a more limited diet and a stricter régime are avoided.

HYPOGLYCÆMIA

Wauchope [23] says: "The point at which hypoglycæmia begins is even more difficult to determine than the normal level; it is indeed not a point but an elastic zone." She suggests the following figures for adults: normal fasting blood-sugar 0·1, symptoms of hypoglycæmia at about 0·08, these become severe at 0·05 and death may occur in the neighbourhood of 0·025. The figures are probably lower in children. Harrison [23] estimated the blood-sugar in a number of children under 12 years of age, and in 11 of these it was below 0·05 on 28 occasions without symptoms, and the lowest value was 0·028. In this series none of the cases was actually observed in coma. Readings of 0·04 were, however, often seen in children with no symptoms, the lowest without symptoms being 0·035. The early symptoms in children are very likely to be missed, for even adults find them very difficult to describe. Wauchope says that children often become pale and tearful, often they are merely naughty or perverse. They may fly into a sudden rage, scream and kick, and refuse obstinately whatever is suggested. They are more prone to develop convulsions than adults. The actual coma is liable to be mistaken for natural sleep. In these, the early symptoms were usually very indefinite and included such complaints as irritability, inexplicable crying, pallor, flushing, hunger, and perspiration. Diagnosis usually depended on the time of onset in relation to the dose of insulin and a careful history as to food and exercise. In the more severe attacks coma usually developed without much warning. Convulsions occurred five times in nine cases of coma. There were no fatal cases, in spite of the fact that in most, medical aid was not available at the time and no treatment was given until the patient began to come round, in some cases after two or three hours, and could take sugar by the mouth. Very few fatal cases in children appear to have been recorded.

Hypoglycæmia occurred most commonly during the first year of insulin treatment and usually resulted from a patient being discharged on too high a dose of insulin. The causes of this in these patients appeared to be three: failure to allow for the effects of exercise; too rapid standardisation and failure to allow for the initial improvement in carbohydrate tolerance; and failure to allow for the improvement of carbohydrate tolerance following the removal of a septic focus.

Lawrence [24] has shown the effects of exercise in

lowering the blood-sugar. If too little exercise is given in hospital during the later stages of treatment, when the child goes home and resumes a normal life the dose of insulin is too high, the blood-sugar is lowered, and the carbohydrate reserves are depleted.

If standardisation is carried out too rapidly there may be considerable recovery in tolerance after discharge from hospital so that the dose of insulin becomes too high and hypoglycæmia develops suddenly before this is realised. If standardisation is carried out after the removal of some septic focus or while the effects of some latent infection are still present, the patient requires a much larger dose of insulin than is the case later when these effects have passed off, with the result that hypoglycæmic coma develops some weeks after discharge.

The condition can in most cases be avoided if the patient is watched carefully, particularly during the first few months after discharge, but when patients are only able to attend hospital at intervals of a month or two months adjustments of insulin dosage are not always carried out. Other cases are due to carelessness, such as the omission of a meal after insulin or an overdose.

Great instability of the blood-sugar readings occasionally occurs and has already been mentioned. When this is present hypoglycæmic attacks may be troublesome. Brucke [25] describes a child of 8 who had seven severe hypoglycæmic attacks in less than a month although diet and insulin were under strict supervision, and Heimann-Trosien and Hirsch-Kauffmann [26] another in which extreme variations in the blood-sugar readings occurred with no clear explanation. Wauchope emphasises that after manifestations of hypoglycæmia, however slight, insulin should be discontinued or reduced and guarded by abundant carbohydrate until the balance is re-established; she considers that the last course is probably the best because it promotes replenishment of glycogen stores.

DIABETIC COMA

In this series diabetic coma occurred six times in four patients. Two of these were cases of acute coma in which the diagnosis of diabetes had not previously been made and no treatment had been given. One of these was fatal. In four cases coma occurred as a result of infections during the course of the disease, and in three of these it was caused by the usual dose of insulin being stopped because the child was ill. One of these died in coma. In the fourth, the patient developed an acute empyema of antrum, and, although the usual dose of insulin (20 units b.d.) was continued, coma developed. Recovery was rapid with a small extra dose of insulin. Both the cases who died were in extremis when they were admitted to hospital with prolonged coma and dehydration. They had neither been given any insulin for the coma.

Apart from the two cases of initial coma only one occurred in this series, which covers 60 diabetic years, which might not have been prevented by continuation of the usual dose of insulin. The case in which insulin had been continued proved extremely easy to treat.

Of the treatment of a diabetic child during an infection Joslin [15] says:—

> "Do not omit insulin but rather give it more frequently adjusting the dose to keep the urine sugar free or nearly so. Presumably it will be necessary to increase the insulin one-half or even to double it, but if it is given at six- or four-hourly intervals there is little danger of an insulin reaction. With care a diabetic child will pass through any sort of infection which a normal child will withstand."

Unfortunately, fear of hypoglycæmia is still one of the causes of coma. The danger of the former during an infection is, however, slight, and in cases of real doubt can be made still less by giving fluids containing plenty of glucose. The Figure shows clearly the way in which the blood-sugar rises during an infection, even though the amount of carbohydrate given is diminished and the dose of insulin increased. This child was extremely sensitive to infections and eventually died in coma when insulin was stopped during a cold.

GROWTH ACTIVITY AND SEXUAL DEVELOPMENT

An important test of the efficiency of treatment is the *growth* and development. Table II. shows the present height and weight of the 16 surviving patients here described:—

TABLE II.—*Showing Height and Weight of 16 Surviving Patients*

Case	Sex.	Duration of diabetes in years.	Age now.	Weight* now.	Average for age.	Height* now.	Average for age.
				st. lb.	st. lb.	ft. in.	ft. in.
1	F.	8	15	6 6	7 8	5 1	5 1
2	M.	8	21	11 10	..	5 11½	..
3	M.	1½	14½	6 4	6 13	4 10	5 0½
4	M.	6	13½	6 6	6 3½	4 8	4 10
5	F.	2	16½	8 6	8 3	5 2	5 2
6	F.	5	17	9 2	8 3½	5 1	5 2½
7	M.	½	10½	4 11	5 0	4 6½	4 4½
8	M.	3	9½	4 0	4 8	4 2	4 2½
9	F.	3½	11	5 3	4 13	4 4½	4 5
10	F.	7	18	6 11	8 3	5 2½	5 3½
11†	M.	6	15½	4 9	7 13	4 6½	5 3½
12	F.	3½	7	3 5	3 5½	3 8	3 8
15	F.	7	21	9 8	..	5 6½	..
16	M.	1½	15	7 10	7 4½	5 2	5 2½
17	M.	1½	13½	8 0	6 3½	5 0½	4 10½
18	M.	½	9½	5 0	4 8	4 8	4 4½

* Without shoes, with clothes.
† Congenital heart disease.

Case 11 is grossly undergrown, but he has severe congenital heart disease. Cases 7 and 18 have only had diabetes for six months. Of the remaining 13 cases, five are underweight, one is of average weight, and seven are overweight. Two are over average height, five are of average height, three are 1 in. or less under the average, and three are 2½ in., 2 in., and 1½ in. under the average respectively. The physique of all except Case 11 compares very favourably with that of other children of the same age and class. None of the patients have the puffy myxœdematous appearance seen in patients taking insulin.

Activity.—The activity of these patients is not restricted in any way. Those who are still of school age attend regularly and do not appear to catch more infections than normal children. In intelligence they seem to be rather above the average. Case 4, who is now 13 and one of the worst diabetics in the series, and has had the disease since he was 7, has played all games, including football and swimming for several years, is top of his class, and sings in a college choir.

Sexual development.—(Males). Case 2, aged 21, has had very severe diabetes for eight years and is quite normal in development and function. The five other males between 13 and 16 appear to be developing normally. (Females). The five females between 15 and 21 have all developed normally. Three of these aged 15, 17, and 18, who have had diabetes for 8, 5, and 7 years have never had any

menstrual periods. Case 15, who is now 21, and has had the disease for seven years, had no periods until she was 20, and has had three since. Case 5 started normal periods at the age of 14 and these ceased when she developed diabetes at 14½. After six months' insulin treatment they returned and have continued irregularly since but getting more regular.

Joslin [15] states: "The normal sexual development of a diabetic child at puberty may soon be considered as an index of good or bad treatment." In considering the above results however it should be remembered that in those cases with a longer duration than five years insulin treatment was often insufficient to control the disease and the diet was often very restricted.

In conclusion, I should like to thank Dr. C. E. G. Wolf and the staff of the biochemical laboratory at Addenbrooke's for their investigations, Dr. G. S. Haynes, Dr. J. F. Gaskell, and Dr. C. H. Whittle for sending me cases, and Miss J. I. Mills for help in arranging diets.

REFERENCES

16. Lawrence, R. D.: The Diabetic Life, London, 1931.
17. Woodyatt, R. F.: Chemical Methods in Clinical Medicine, London, 1930.
18. Rabinowitch, I. M.: Canad. Med. Assoc. Jour., 1930, xxiii., 489.
19. Short, J. J.: Jour. Amer. Med. Assoc., 1931, xcvi., 1940.
20. Poulton, E. P.: Proc. Roy. Soc. Med., 1931, xxiv., 1291.
21. Macleod, J. J. R.: THE LANCET, 1930, ii., 383 and 513.
22. Wauchope, G. M.: Quart. Jour. Med., 1933, n.s. ii., 117.
23. Harrison, G. A.: Brit. Med. Jour., 1926, ii., 57.
24. Lawrence, R. D.: Ibid., 1926, i., 648.
25. Brucke, K.: Münch. med. Woch., 1926, lxxv., 120.
26. Heimann-Trosien, A., and Hirsch-Kauffmann, H.: Klin. Woch., 1926, ii., 1655.

PLEURO-PULMONARY PERFORATIONS

THE USE OF GAS ANALYSIS IN THEIR DIAGNOSIS*

BY C. ALLAN BIRCH, M.D. Liverp., M.R.C.P. Lond., D.P.H.

LATE SENIOR MEDICAL REGISTRAR, ROYAL INFIRMARY, LIVERPOOL, AND DOROTHY TEMPLE CROSS TRAVELLING FELLOW

THE methods ordinarily employed in the diagnosis of the presence of a communication between the pleural space and the lung may be summarised as follows:—

1. *Clinical.*—If a patient known to have an empyema suddenly coughs up a large amount of pus, or if a complete spontaneous pneumothorax develops, the presence of a pleuro-pulmonary perforation is obvious. Other suggestive points are maintenance of a pneumothorax in spite of deflation, amphoric breathing over a pneumothorax cavity in some cases, and the lung fistula sound. Inversion of a patient may reveal by clinical signs a fistula previously sealed by fluid.

2. The injection into the pleural space of dyes and volatile substances may by their subsequent detection in the sputum reveal the presence of a fistula.

3. Pleural pressure studies such as the test of Bard and of Dumarest.

4. X ray of the chest in inspiration and expiration may suggest a fistula by the behaviour of the mediastinum and collapsed lung.

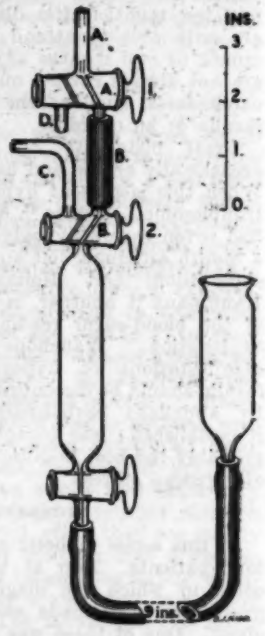
5. A fistula may be visualised by thoracoscopy.

In addition to these methods it is possible to detect a pleuro-pulmonary perforation by gas analysis, and the purpose of this paper is briefly to describe this method.

Since the original observations of Davy [1] in 1823, numerous records have been made of the composition of the gas in the pneumothorax cavity. So far this method has been used in the study of special cases only. It can however be used as a routine procedure, and the air in the pleural space can be examined with the same ease as a pleural effusion. A sample of gas is ta[illegible]om the pneumothorax cavity into a sampling tube by displacement of mercury and its oxygen and carbon dioxide content determined.

APPARATUS AND TECHNIQUE

Any apparatus is suitable which is capable of analysing a sample of gas of about 10 c.cm. volume and in which the CO_2 and O_2 together are not more than about 25 per cent. Accuracy to two places of decimals is not necessary, since only large and definite variations of oxygen and carbon dioxide are clinically significant. Small and portable machines are liable to imperfections and leaks which invalidate the method, and it is easier and better to carry the sample to the machine than the machine to the patient. A good sampling tube is essential, and the model here illustrated was made so that a sample could be obtained at about atmospheric pressure and transferred to the gas analysis apparatus without any possibility of leakage.



It has a capacity of 25 to 30 c.cm. and obviates the necessity of a special tube for washing out the connexions. A sample is taken through A and B by lowering the levelling bulb. This contaminated sample is expelled through C, having closed tap 1 and turned tap 2 so as to connect the sample tube and C. Another sample is then taken. The outlet D is to enable the mercury from the apparatus to fill the tubing as far as tap 1 before the specimen is expelled for analysis.

Most phthisiologists now use atmospheric air in the pneumothorax cavity, but it is known that no matter which of the gases hitherto used is introduced into the pleural space, the resulting mixture has a fairly definite composition, provided that the gas has no irritant effect on the pleura. When air is introduced into the pleural cavity, CO_2 diffuses into it from the capillary blood more rapidly than oxygen passes from the pleura into the blood; this causes a temporary increase in the volume of the pneumothorax first noted by Dautrebande and Spehl.[2] However, in a matter of hours equilibrium is established. The actual composition of the pleural gas will be changed by variations in degree of collapse of the lung, by histological changes in the pleura, and by the presence of pleural effusion.

In order to provide a background on which these results can be judged, the gas content of the pneumothorax cavity has been examined in 150 cases, and from this series the following conclusions can be drawn:—

Whereas the atmospheric air contains about 21 per cent. oxygen and practically no CO_2 (0·03 per cent.)

* From the Sea View Hospital, New York City, and the Respiration Laboratory, Royal Victoria Hospital, Montreal.

the air of a dry pneumothorax cavity contains roughly between 1 and 5 per cent. of oxygen and between 6 and 8 per cent. of CO_2.

When inflammatory fluid or exudate is present the oxygen content is low and may be below 1 per cent., and the CO_2 is high and usually over 10 per cent.

In the present series of cases without fistula the oxygen content of 60 dry cases varied from 0·9 per cent. to 4·56 per cent., and the CO_2 content from 5·85 per cent. to 10 per cent.

In 90 cases with definite fluid present the oxygen content varied from 0·4 per cent. to 4·31 per cent., and the CO_2 from 9·84 per cent. to 14·7 per cent.

As long ago as 1876 C. A. Ewald showed that the air in open pneumothorax contained 16·75 per cent. oxygen, which fell to 2·6 per cent. when the fistula closed, but no detailed studies were made. In many cases the sum of the evidence may show very definitely that the fistula is open, but in others it may be difficult of proof.

ILLUSTRATIVE CASES

In ten cases analysis of the pleural gases was of value in demonstrating the presence and state of a pleuro-pulmonary perforation. The following are details of three of these cases:—

(1) A. B., male aged 50.

Had extensive bilateral pulmonary tuberculosis when first seen. Sputum was Gaffky 10 and fluid in the right chest contained tubercle bacilli. He was considered unfit for artificial pneumothorax, but he developed a spontaneous pneumothorax in the left side and was deflated many times.

Gas analysis showed oxygen 1·14 per cent. and CO_2 12·2 per cent., and four days later oxygen 2·5 per cent., CO_2 11·5 per cent. Three days later 2000 c.cm. of fluid were removed, and by shifting the patient samples of gas were obtained at intervals during the removal of the fluid. These showed—

O_2 ..	2·0 per cent.	CO_2 ..	11·3 per cent.
O_2 ..	2·12 ,,	CO_2 ..	13·18 ,,
O_2 ..	2·16 ,,	CO_2 ..	13·20 ,,

At this point the patient developed sudden dyspnœa and pain in the chest. Amphoric breathing and bubbling sounds were heard at the left base. Gas analysis showed oxygen 10·21 per cent., carbon dioxide 9·85 per cent., indicating that air had entered the pleural space from the lung.

At autopsy a pyopneumothorax with a bronchial fistula was found.

(2) C. D., male aged 26.

Had a spontaneous pneumothorax on the right side two weeks before admission. Gas analysis showed—

O_2 ..	3·8 per cent.	CO_2 ..	8·2 per cent.
O_2 ..	2·1 ,,	CO_2 ..	8·7 ,,
O_2 ..	1·2 ,,	CO_2 ..	11·3 ,,

When fluid developed analysis showed O_2 0·9 per cent., CO_2 12·6 per cent. Later he developed rise of temperature, dyspnœa, cyanosis. Gas analysis showed O_2 8·5 per cent., CO_2 11·7 per cent., indicating that a pleuro-pulmonary fistula had opened. The coughing up of gomenol in oil previously put into the pleural space confirmed this.

(3) E. F., male aged 18.

Had initial pneumothorax on the left side five months after the onset of illness. Five weeks later fluid developed which subsequently showed tubercle bacilli. Gomenol in oil was injected as a disinfection oleothorax and was coughed up. An X ray photograph showed the gomenol to have disappeared. Methylene-blue was also coughed up. Two gas analyses showed—

O_2 ..	8·52 per cent.	CO_2 ..	9·60 per cent.
O_2 ..	7·61 ,,	CO_2 ..	9·75 ,,

indicating a broncho-pleural fistula.

REFERENCES

1. Davy, John: Phil. Trans. Roy. Soc., 1823, i., 496.
2. Dautrebande, L., and Spehl, P.: C.R. Soc. Biol., 1922, lxxxvi., 970.

PERCENTAGE OF FAT IN HUMAN MILK

INFLUENCE OF THE METHOD OF EXTRACTION

By Margaret Frances Lowenfeld, M.R.C.S. Eng.
CO-DIRECTOR OF INSTITUTE OF CHILD PSYCHOLOGY

Sibyl Taite Widdows, B.Sc. Lond., F.I.C.
LECTURER IN CHEMISTRY AT THE LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN; AND

Hazel H. Chodak Gregory, M.D., M.R.C.P. Lond.
PHYSICIAN FOR CHILDREN'S DISEASES, ROYAL FREE HOSPITAL

Clinicians interested in infant feeding are continually brought in contact with the problem of fat absorption, and except for the generally accepted fact that the strippings of a breast or udder contain more fat than the milk of the earlier part of the feed, it has been usually assumed (see Truby King manual) that the percentage of fat in human milk remains roughly at an average of 3·5.

In a recent paper in the *Biochemical Journal* [1] the authors reported results obtained in an investigation of the fat percentage. Previous work [2] on the percentage composition of early milk had suggested that the method of extraction exerted considerable influence on the percentage of the fat although that of the other constituents was not affected. There has always been a considerable variation in the fat percentage of human milk recorded by different investigators, without any reasonable grounds for this variation being suggested. We may summarise the facts already put forward.

With regard to the factors which influence the percentage of fat in milk, these are method of extraction, period of lactation, individual variation, and the volume of the milk in the breast at the time of taking the sample; all of which were taken into account when considering the effect of the method of extraction.

In the normal action of the baby feeding two mechanical factors are concerned, pressure and suction. Direct pressure exerted by the gums of the baby upon the nipple and areola of the breast, and suction action exercised by tongue and cheek drawing on the openings at the end of the nipple. Digital expression and gentle suction from a breast pump, used without pressure on the breast, seem to give the nearest approach which can be made artificially to reproduction of these two factors of the normal process, and were the methods of extraction employed by us. As a result of systematic comparisons made by these two methods (details of which were given in the *Biochemical Journal* [1]) it was shown that pressure is the most important factor in producing a high percentage. The greater the pressure the steeper the rise in the fat percentage. Suction alone tended to lower the percentage.

It is a well-known fact that the percentage of fat in samples taken at the end of a feed is normally higher than that in the milk taken from the breast at the beginning of the feed. Yet it was possible, by using digital expression to extract the milk at the beginning of the feed, then allowing the baby to feed for three minutes and using the breast pump to extract the end milk, so as to show that not only was this difference annulled, but that the percentage of fat in the end specimen in some cases was actually lower than that in the one taken before the feed. After investigating the milk of 51 mothers and analysing 294 specimens, the conclusion we drew was the

following: that in any given sample of milk, other factors being equal, the percentage of fat present will depend inversely on the quantity of milk in the breast at the time of taking the sample, and directly upon the degree of pressure exerted upon the areola and nipple in the process of extraction. The practical use to which the above facts have led has been in the treatment of certain clinical difficulties occurring in connexion with breast-fed infants.

It is generally agreed that of all the ingredients of milk, fat is the most difficult for the infant to digest. Czerny and Keller [3] state that only few children can tolerate high fat percentage in their feeds. The majority of infants who are fed for a long period on high fat milk mixtures become pale and ultimately more or less anæmic. These observers also state their experience that infants on high fat rations suffer from vomiting, and that the vomiting fails to respond to therapeutic measures, and only yields to an alteration in the diet. In Prof. Findlay's wards at the Royal Hospital for Sick Children, Glasgow, "fat dyspepsia" was recognised as a definite clinical entity. This diagnosis was made because the vomiting and failure to put on weight, for which the infants were admitted to hospital, were completely relieved by the substitution of skimmed milk mixtures for the whole milk which the infants had previously been taking.

Brennerman [4] states that: "The amount of fat in cow's milk has a decided effect on coagulation, but even more so on the emptying time of the stomach. Fat-free milk coagulates more quickly and completely than does whole milk, and forms a harder, whiter curd. The richer the milk in fat, the slower and less sharply defined is the separation into curds and whey, the yellower and smaller and softer the curd, but the harder to digest and the slower to leave the stomach." Because of this effect of fat in forming smaller and softer curds, Macy [5] erroneously attributes to Brennerman the statement that fat aids the digestion of protein. Some dried milk manufacturers have put a half-cream milk powder upon the market.

While high fat percentages undoubtedly interfere with digestion, it is important not to overlook the value of an adequate supply in the feeds of weak and undernourished babies. This has been specially emphasised by Koeppe,[6] who has observed improved growth and development in some weakly infants suffering from malnutrition, when they have been allowed to secure the last portion of the milk from the mammary gland. Our observations on the fat percentages obtained in milk samples by different methods of extraction show that the percentage of fat ingested even from the same breast by different infants will vary considerably, a baby who is a vigorous sucker being able to obtain a higher proportion of fat than the child who is a poor sucker. Macy and her collaborators state that Dr. Emmet C. Troxell, as a dermatologist, has observed that in some vigorous, hardy, breast-fed infants a certain type of eczema develops that clears up by shortening the nursing period and by allowing the infant to feed from both breasts, and thus preventing the baby from obtaining the strippings.

In the Infant Welfare Department of the Royal Free Hospital, in coöperation with Dr. Hazel Chodak Gregory, clinical observations were made along the lines suggested by the findings in our paper in the *Biochemical Journal*,[1] and, as a result of this work, it became possible to put the babies observed into two groups.

Type 1.—A small active baby showing dyspeptic symptoms such as vomiting and green stools. Careful inquiry and observation elicits the facts that the baby is a very vigorous sucker and that the mother's milk yield is not plentiful. This baby is getting a milk containing a very big percentage of fat, probably the highest fat percentage possible for this woman. As the quantity of fluid ingested is small, the total fat will be proportionately large. This condition, once recognised, we have found, can be rectified by an understanding of the situation and an alteration of conditions. The aim to be achieved is an increase of total fluid resulting in a proportionate diminution of fat, combined with an absolute reduction in fat intake. We have found that the first can be achieved by administering boiled water before and during the feed, the second by ensuring that the infant does not get the strippings of the milk. This can be secured by putting the baby to both breasts at each feed and not allowing the strippings to be taken from either. Manual stripping afterwards maintains the milk supply.

Type 2 is the exact antithesis of Type 1. Here the baby weighs above the average at birth, is contented and sleepy, and yet fails as time goes on to increase satisfactorily in weight, and this in spite of ingesting apparently adequate quantities of milk, a point which can be verified by test weighing. In many cases of this type studied, there was present an abundant supply of milk, but the musculature of the nipples was so lax that the milk tended to spurt from either breast before feeding. The baby is therefore in the position of taking dripped milk, which will be the lowest possible in fat for that mother (see *Biochem. Jour.*[1]).

As has been shown,[2] no effect is produced by the method of extraction upon the sugar content. Dripped milk will therefore contain a normally high sugar content. The second type of child is therefore obtaining a milk ample in quantity, normal in sugar, but deficient in fat, due to the fact that the baby does not suck, and the total feed therefore is practically that of dripped milk. We have found this condition to be corrected, first by lengthening the intervals of feeding, so as to allow the infant to get hungry and thus encourage increased pressure and cause a rise in the percentage of fat intake. Secondly by withdrawing some of the fore milk, and thus ensuring that what milk the infant can be induced to suck should contain a large quantity of strippings. By these procedures both conditions can be rectified without taking the baby off the breast.

It is possible that the facts that have been recorded above may be of assistance to clinical officers in coping with certain of the difficulties that arise in maintaining successful breast feeding.

REFERENCES

1. Widdows and Lowenfeld: Biochem. Jour., 1933, xxvii., 1400.
2. Lowenfeld, Widdows, Bonds, and Taylor: Ibid., 1927, xxi., 1.
3. Czerny and Keller: Des Kindes, 1925, i., 132.
4. Brennerman: Abt's Pediatrics, 1923, ii., 630.
5. Macy, Brown, and Hunscher: Amer. Jour. Dis. Child., 1931, xlii., 569.
6. Koeppe: Jahrberich. f. Kinderh., 1924, v., 177.

HOSPITAL WAITING-LISTS.—It was stated at a recent meeting of the Swansea Hospital Board that the waiting-list has increased from 64 last year to 1149. The contributory scheme has now been joined by 955 firms and 85,000 employees belonging to them, and 25,000 unattached contributors.—The Fleming Memorial Hospital for Sick Children, Newcastle-on-Tyne, is stated to have a waiting-list of some hundreds. It has been swollen by a decrease in the number of beds "owing to the lack of space and modern sanitary arrangements."

CLINICAL AND LABORATORY NOTES

A NEW DUAL-ACTION PRINCIPLE IN TOOTH-EXTRACTION FORCEPS

BY D. M. SHAW, L.D.S. R.C.S. Eng.

THIS note describes a new type of dental forceps and also reports opinion on the results of some first trials of the instrument in the extraction of over 300 teeth, as many as possible of which were selected as being likely to prove "stiff" or firmly planted units. Most of the extractions were done in private practice; some were at dental hospital clinics and in the dental department of a general hospital.

The Levatorceps, as it is called, differs from all ordinary forceps in that each blade or beak can, in a simple and effective manner, be independently thrust and advanced along the surface of the root for a short and safely controlled distance, the directional control at each forward thrust being made more complete by the maintained engagement of the opposing (and then stationary) beak. And thus, by the alternate and successive advance of each blade, the penetration of both blades to any desired depth is mechanically facilitated. The rootward penetration is in this way effected with only about half the manual thrusting effort required for that simultaneous advance of both beaks to which ordinary forceps are restricted. During the alternating advance of the thrusting beak through a short (2 to 4 mm.) and nearly flat arc, the fit and alignment of the other—the opposing and then less active—beak does not tend to be wrongly disturbed; with ordinary forceps the latter kind of faux pas is the not very uncommon result of the attempt to secure the wished-for advantage—of some degree of alternating single-beak penetration—by the makeshift of a rocking or swinging movement of the whole forceps. And further, the reasonable expectation that the gradual single-blade penetration might involve rather less bruising or crushing of the investing tissues appears to be supported by close observation of the levatorceps in action, as well as of the post-extraction condition.

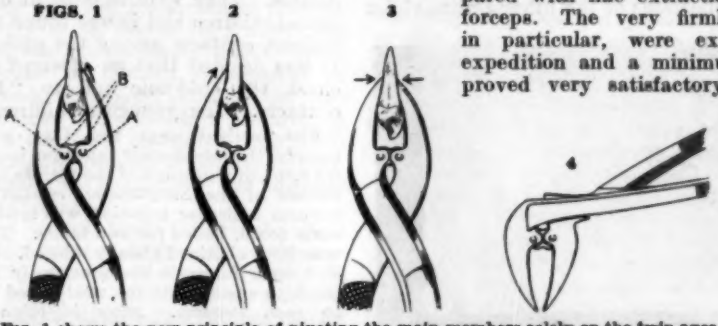


FIG. 1 shows the new principle of pivoting the main members solely on the twin axes A, A, which axes are situated at each end of a short link or shackle bar B, the latter having a restrained range of movement in the same plane as that of the opening and closing movements of the instrument. To save space, Fig. 1 also indicates the advance of one blade along the root surface.

FIG. 2 shows the advance, in succession, of the opposite blade.

FIG. 3 shows the "penetration" arrived at after a few alternating (and relatively moderate) thrusts in succession.

FIG. 4 shows a "hawk's-bill" forceps for lower teeth.

Although the levatorceps may fairly be said to combine in one instrument, and to a proved serviceable extent, the distinct and hitherto immiscible utilities of the elevator and the forceps, no absurd suggestion is here implied that the new instrument could take over or perform any of those operations in which the unique and invaluable services of the elevator proper are specially called for. In addition to the above-noted primary feature of the levatorceps, the more forward placing of each axis or fulcrum (*in front* of the usual and necessary "crossing" of the main members) provides, as the accompanying illustrations make sufficiently evident, a much greater leverage (mechanical advantage) and better non-slipping grasp of the root; and again with marked economy of manual gripping effort. In effect, and in surprising degree, there was experienced a welcome reduction in that muscular strain and fatigue from sustained gripping effort which sometimes, in stubborn extractions, compels the prudent operator to desist and take one or more rests. In the levatorceps, as in many types of ordinary forceps, the diagonal "crossing" is boxed in, thus affording an added security against undesired looseness in the more forward and real axes of movement.

The impression given by the 300 extractions with the levatorceps was that the teeth were dislocated and removed with decidedly increased ease, as compared with like extractions with ordinary forceps. The very firmly planted teeth, in particular, were extracted with an expedition and a minimum of strain that proved very satisfactory to patient and operator. In a few chance instances, in each of which a very "stiff" tooth did not even begin to dislocate during patient attempts with ordinary forceps, a change-over to the levatorceps quickly resulted in a successful whole-tooth extraction. The new instrument proved serviceable also in extractions of displaced and incompletely erupted teeth removed for the regulation of crowded dentitions.

Any desired shape or size of beak or of handles may be incorporated in the levatorceps. Moreover, the alternating single-blade method of penetration is quite optional—that is, there is nothing to hinder the operator from using it, at will and at any operative stage, by the simultaneous advance of both beaks, just as with ordinary forceps. This latter choice of a variable technique has indeed in some cases been advantageously applied during multiple extractions, wherein some of the teeth were stiff and some were easy propositions.

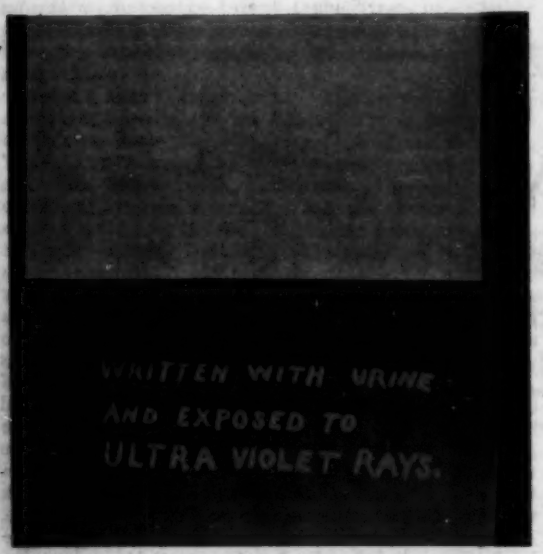
One of the arguments stressed by proponents of the open or "surgical" removal of teeth pointed earnestly to the lamentably large proportion of broken teeth and roots, unremoved root remnants and sequelæ associated with extraction and attempted extraction by forceps. They urged that that long trail of trouble would be reduced to about vanishing point if and when the advised surgical method came to be widely adopted. However that may or may not be, no one can safely assert that the limits of perfection or usefulness in forceps design have already been attained. The number of teeth relegated to treatment by forceps in this country alone amounts to several millions in each year. And so the advent

of a new type of instrument by which adequate penetration along the socket is made surer and easier, and a stronger non-slipping grasp obtained with relatively less effort, is perhaps of sufficient general interest to merit further attention and trial.

SECRET COMMUNICATIONS MADE VISIBLE

By F. W. Martin, M.D. Glasg.
ASSISTANT, FORENSIC MEDICINE DEPARTMENT, UNIVERSITY OF GLASGOW; AND
Konrad Beöthy, M.D. Pécs
LECTURER, MEDICO-LEGAL INSTITUTE, PÉCS UNIVERSITY, HUNGARY; ROCKEFELLER RESEARCH FELLOW AT GLASGOW UNIVERSITY

Ultra-violet radiation has come to be recognised as a force both valuable and versatile in its application. Criminologists have found filtered ultra-violet light a valued assistant in many spheres of their work. Existing literature provides ample evidence of the many possible applications of the filtered ultra-violet



Two photographs of a sheet of paper on which is a sentence written with urine. Above, by ordinary light. Below, by filtered ultra-violet light.

ray. Investigations with these rays can be carried out expeditiously, and are simple in execution. Moreover, the test as applied by the analytic quartz lamp has the valuable advantage that the object under examination is in no way damaged, marked, or altered. As has been pointed out by Rubner,[1] and also by Goodman,[2] correspondence to and from prisoners can be examined in a few seconds by exposure to filtered ultra-violet light, since the substances commonly used by prisoners for secret writing—e.g., urine, saliva, milk, all show fluorescence on such exposure.

No evidence of the exposure is left on the communication and this method of rendering the invisible visible is far in advance of the usual method of heating. Where heat is used the writing turns black or brown. As a result the communication cannot be sent to its destination, because suspicion would be at once aroused. Under filtered ultra-violet light, however, such writing is read without altering the letter or communication in any way, since the rays leave no trace of any kind to warn the recipient, and thereby put him on his guard.

Such photographs form a permanent record of the invisible rendered visible, and may be produced in a court of law and submitted with striking effect to a jury.

REFERENCES

1. Rubner, M.: Ultraviolette Strahlen und unsichtbare Geheimschriften, Archiv. Kriminologie, 1926, Heft 4.
2. Goodman, H.: Police Jour., 1931, iv., 230.

A NOTE ON THE VALUE OF THE DICK TEST FOR INSTITUTIONAL PURPOSES

By R. M. Bates, F.R.C.S. Eng.
RESIDENT MEDICAL OFFICER, STOKE PARK COLONY, BRISTOL

The first evidence of an outbreak of scarlet fever in Stoke Park Colony (for mental defectives) occurred when two children simultaneously developed the disease. They were isolated at once, but both were school-children and it was found that the direct and indirect contacts among the patients numbered 389. It was decided that an attempt should be made to check the epidemic and to "Dick-test" all the contacts. The youngest children were tested first.

The method used was that generally employed—namely, the intradermic injection into the left forearm of 0·2 c.cm. of a dilution of the filtrate obtained from a broth culture of the *Streptococcus scarlatinæ*. Into the right forearm a similar injection was made of 0·2 c.cm. of the same toxin, boiled for two hours. The toxin and control were both obtained already diluted. Injections were given into both forearms simultaneously and great care was taken to ensure that the weal raised was of the same size on each forearm. After injection the patients were examined in twenty-four hours and again in forty-eight hours. It was occasionally necessary to make a third examination, especially in those cases in whom there was a definite reaction on both forearms. It was found that when the reaction on the left side was larger than that on the right a definite positive reaction subsequently developed.

All patients giving a positive reaction received 4 c.cm. of antiscarlatinal serum intramuscularly—the outer side of the thigh being used in all cases.

On the first day 58 patients were tested, of whom 23 gave positive reactions in twenty-four hours. Of these 23, 2 patients had developed scarlet fever at the time of examination. All were given serum and the cases of scarlet fever were isolated. Testing was continued each day and a list was kept of the name and age of each patient. Of the 389 patients tested 69 were Dick-positive and each received 4 c.cm. of antiscarlatinal serum. No fresh cases of scarlet fever occurred. Thirty-seven members of the staff were Dick-tested at the same time, of whom 10 gave a positive reaction. The same intramuscular injection of 4 c.cm. of antiscarlatinal serum was given in these cases. Of the 79 cases receiving "passive immunisation" only one, a member of the medical staff developed serum sickness.

Age-groups.	Total patients.	Positive reactors.	Per cent. positive.
5–10	49	21	42·8
10–15	79	17	21·5
15–20	96	14	14·6
20–25	49	5	10·2
25–30	42	1	2·4
30–35	42	4	9·5
35–40	22	6	27·2
40–45	10	1	10·0

The patients tested (exclusive of staff) were arranged in five-year groups as in the accompanying Table, and the

percentage of positive reactors in each group calculated. The percentage of Dick-positive patients in each age-group shows a very regular fall down to the age of 30, which is significant of a regularly increasing immunity to the streptococcus. The apparent rise after the age of 30 is more difficult to interpret. Of the 1700 patients at present alive in this institution a recent analysis of their age-incidence shows that only 6 per cent. have reached the age of 35 or over. In the last 400 consecutive deaths in this institution 96 per cent. died before reaching the age of 30. The rise in the Dick-positive percentages after the age of 30 may therefore point towards a decreasing immunity to the streptococcus and possibly to other organisms.

It must be pointed out, however, that comparing the percentages of Dick-positive patients in the 20–30 and over-30-year age-groups a result is obtained which could be produced by random sampling once in 12 times, and the apparent rise may therefore be due to pure chance.

I am indebted to the director of medical services, Prof. R. J. A. Berry, for permission to publish this paper. The incidental expenses were borne by the Rosa Nelson Burden research fund.

REVIEWS AND NOTICES OF BOOKS

The Anæmias

By JANET VAUGHAN, M.D. London: Humphrey Milford, Oxford University Press. 1934. Pp. 248. 12*s.* 6*d.*

THIS monograph is a review of present knowledge of hæmatology, and more especially of the advances that have been made during the last five or six years. It is limited to disturbances of the red cells and their precursors, leukæmia and the hæmorrhagic diseases being mentioned only in so far as they affect the erythron. Dr. Vaughan has succeeded admirably in giving a clear picture of modern conceptions of anæmia, and the book, moreover, contains the outcome of much previously unpublished research in which Dr. Vaughan has been associated with Prof. H. M. Turnbull, whose descriptions of normal erythropoiesis and the pathological anatomy of the anæmias are an important contribution.

One of the most useful tools in hæmatological research has been the exact measurement of the size and the hæmoglobin content of the erythrocytes, and it is therefore fitting that the book should open with a summary of these data. The leading motive of the book is the paramount importance of disturbance in the maturation of the red cells in the causation of anæmia. Dr. Vaughan holds that many of the anæmias which have been attributed to hæmolysis are really the result of disturbances in the metabolism or nutrition of the red cells, and it certainly appears doubtful whether we are justified in describing an anæmia as hæmolytic unless free hæmoglobin is detected in the plasma or the urine. A notable section of the book, which is chiefly founded on personal research with Prof. Turnbull, deals with the anæmia, characterised by the presence in the peripheral blood of a few immature white cells of the myeloid series and immature red cells, which appears in certain cases of carcinomatosis with deposits in the bones, and more seldom in other diseases of the bones. For this condition the title leuco-erythroblastic anæmia is proposed and seems more suitable than the previous equivocal nomenclature. In spite of the reticulocytosis, there is no definite evidence of excessive destruction of the red cells, and it appears that the carcinoma cells in some way disturb the maturation of the red cells and render the bone-marrow dysplastic. Rather similar disturbances of the maturation of the red cells occur in the anæmia due to internal radiation with radioactive substances, of which Dr. Vaughan gives a careful description. This anæmia was first observed by Martland in women who had been employed in painting luminous dials and had absorbed the radioactive material from their brushes. While Dr. Vaughan's monograph was in the press, Hamilton Fairley has reported the inhibition of erythropoiesis produced by malaria, amœbiasis, and other tropical infections, and the reticulocyte crises which follow the destruction of the parasite by the appropriate chemotherapy. It is probable that Dr. Vaughan's chapter on toxic dyshæmopoietic anæmias will need expansion in the future, as more is learnt of the agencies which inhibit erythropoiesis and the mechanism through which they act.

Idiopathic hypochromic anæmia and pernicious anæmia are remaining more and more in the hands of the general practitioner, now that their treatment has been simplified and systematised. The attention of the research worker, the pathologist, and the consultant physician is thus transferred to the obscure cases which have failed to respond to ordinary treatment and are obviously of a different type. It is for such workers that this monograph will prove invaluable. It contains accounts of all the rarer forms of anæmia and the special investigations that may help in diagnosis. It should also provide a stimulus to research. There is still much to be learnt and Dr. Vaughan has not failed to point out the tasks that await the hæmatologist.

Biochemistry of Nitrogen Conservation

An Introduction to the Biochemistry of Nitrogen Conservation. By GILBERT J. FOWLER, D.Sc., F.I.C., Professor (retd.) of Biochemistry in the Indian Institute of Science, Bangalore. London: Edward Arnold and Co. 1934. Pp. 280. 12*s.* 6*d.*

LET no man allow a dread of biochemistry, instinctive or acquired, to prevent him reading this book. The problem of the satisfactory utilisation of nitrogenous waste material is that of encouraging the right organisms in the right time and place. A kindly Nature has placed them for man's assistance in both soil and sewage. His acceptance of her gift involves public health, economics, and sociology, in addition to microbiology and biochemistry. All these aspects are discussed in Prof. Fowler's book; and if biochemistry is prominent, it is because the prevention of a smell developing and of nitrogen being utterly wasted depends largely on the application of that science. The author is kind to his readers. For those ignorant of microbiology, a short description of the commoner types of organisms and of bacteriological technique is given. For those who know but little biochemistry a brief summary of the chemistry of proteins and carbohydrates is provided.

The importance of two problems is emphasised. The satisfactory disposal of sewage needs no recommendation; but the appalling waste of nitrogen is perhaps not generally appreciated. The total world consumption of "manufactured nitrogen" for agriculture is 1,300,000 tons per annum. The nitrogen excreted by the world population in urine and fæces is 4,000,000 tons per annum, or over three times as much as is required for agriculture. It is interesting to learn that China has been leading the world in nitrogen

conservation. Her farmers are masters in the art of making compost from refuse, and are accustomed to use the nightsoil of her cities for the manuring of their crops. Nowadays, however, all over the world "disposal" is beginning to give way to "conservation." That it is not general in Britain is due to the rich nature of the soil, which has no great need of fertilisers. It is perhaps in India that the demand for conservation is most urgent. On the problems of India the author writes with the authority of experience. The insanitary habits and the use of dried fæces as fuel are particularly unfortunate in a land whose demand for organic manure is practically unlimited.

The book describes the various methods of treatment of sewage and sullage. From the older processes of "dilution" by discharge into lake or sea, of treatment in septic tanks and by aerobic clarification, of final purification in contact beds and trickling filters, we come finally to the activated sludge process with the development of which the author had much to do. By its use sewage is converted into an inoffensive brown humus of great agricultural value and a clear odourless solution of nitrates.

The nitrogen undergoes many chemical reactions in passing from urea and protein to the form of nitrate in which it is assimilated by plants. The description of these reactions and the part played by the various organisms of nitrification, de-nitrification, and nitrogen-fixation is by no means the least interesting part of the book.

Evolution of the Vertebral Column

A Contribution to the Study of Vertebrate Phylogeny. By H. F. GADOW, M.A., Ph.D., F.R.S., late Strickland Curator and Reader in Vertebrate Morphology in the University of Cambridge. Edited by J. F. GASKELL and H. L. H. H. GREEN. London: Cambridge University Press. 1933. Pp. 356. 25*s*.

THERE is something of a melancholy interest in the appearance of this posthumous book. Only a few years ago its author was deservedly famous in the world of morphology, and already he is little more than a name to the student of the subject. The editors have done well in bringing out these notes which, although somewhat fragmentary, were evidently intended for publication in book form. Dr. Gadow's outlook on morphology was derived directly from his great master, Gegenbaur. It is bracing to come across such formal monuments of encyclopædic learning in these days when we have swung away after other (but not therefore false) gods, and have neglected to some extent the hard road which morphologists were wont to tread. We have to return to it from time to time, for only thus can we discover the historical element which, to an increasing degree, is being recognised as essential in the study of the organism. Thus this book will take its place as a record of information and work of reference in the future. It is coloured, of course, by the views of its author, which are not always generally accepted. As an instance we may notice, because of its human interest, that Dr. Gadow seems to have held firmly throughout to his conception of the evolution of the mammalian centrum, while probably most morphologists to-day are inclined to support Cope's reading, which gives the main value to the interdorsal. Dr. Gadow's original view concerning the value of the interventral has always seemed to us to have much in its favour. He does not appear to have been acquainted with Barge's work on occipito-atloid development: it is possible, though not by any means probable, that it might have modified some of his opinions.

This monograph deserves study. The second part, which deals with systemic morphology, presents a mass of observations which would without doubt have been welded into a coherent whole by the author, if he had lived. As they stand they are, at the least, records of a multitude of facts, and in many places and ways are suggestive of the lines along which the mind of their compiler was working. Dr. Gadow had always been interested in vertebral evolution in association with vertebrate evolution, and, as the editors say, the book is a "culmination of investigations and reflections of the greater part of an active life devoted to the morphological problems of the vertebrate phylum." Such a book has a definite place in morphological literature.

The Behaviour of Animals

By E. S. RUSSELL, D.Sc., London: Arnold and Co. 1934. Pp. 184. With 32 illustrations. 10*s*. 6*d*.

THOSE who are distracted with trying to understand why people do what they do may well turn for relief to Dr. Russell's account of the behaviour of animals. He treats the subject in an objective way, as a description of what may be observed, and eschews both the method which seeks to dissect behaviour into a series of tropisms and that which explains the facts in terms of human emotions. The actions of animals must, he says, be looked upon as wholes which, like their bodies, are something more than the sum of the parts, nor can they be understood without reference to the end which is reached any more than development is intelligible without considering the mature product. About instinctive and intelligent behaviour he takes the commonsense view that no sharp separation is possible; purely instinctive action is probably as rare as purely intelligent and the two grade into one another. And he urges that, for the present at any rate, simple observation and experiment should replace attempts at explanations partly in physiological and partly in psychological terms. The book may irritate those who have learned from Dr. Russell's previous books to dislike his organismal outlook, but it is delightfully written, clear, and readable, and it should do much to encourage the accurate natural history studies which he would like to promote.

Die Entzündung des Magens

By Dr. med. NORBERT HENNING, Privatdozent in the University of Leipzig, Oberarzt in the Medical Clinic. Leipzig: Johann Ambrosius Barth. 1934. Pp. 235. RM.23.40.

THE German stomach has been extensively investigated in recent years by two new methods. The radiologist introduces a small quantity of a thin barium emulsion, compresses the organ with a pad applied over the abdominal wall, and screens or photographs it; the barium lodges in the sulci of the mucous membrane and outlines the configuration of the rugæ. The physician passes a gastroscope, usually the new safe flexible instrument, distends the stomach with air, and finds himself able to look at the greater part of its inner surface. Nowhere in Germany have these two methods been practised more thoroughly or more extensively than in the huge Leipzig clinic of Prof. Morawitz.

Dr. Henning has handled the whole gastric material of that clinic for the past six years, and his descriptions and opinions are based with convincing directness

on his own experience. Chronic gastritis for him is a morphological change in the gastric mucosa. Radiologically the rugæ appear larger, broader, more irregular than normal, less easily altered in shape by palpation and distension; in atrophic gastritis they are abnormally tenuous. Gastroscopically, swollen stiff distorted rugæ can be easily recognised, the normal smoothness of the epithelial surface may be replaced by a knobby or granular irregularity, multiple superficial erosions and hæmorrhages are often seen; in the atrophic cases the large vessels of the submucosa become visible through the shrunken thinned mucosa. These changes are fully described and illustrated in the book. An extensive correlation of them with microscopic appearances has not been possible, since few cases are treated surgically. A correlation has been attempted, however, with the clinical histories of the patients, and with the chemical alterations in gastric secretion. In this, the author's enthusiasm does not betray his judgment. The facts are that some patients with chronically inflamed stomachs, but without ulcers, give ulcer-like histories; others have had less characteristic dyspepsias, usually only for a year or two, and many have had no gastric symptoms at all.

The chapters on ætiology and treatment are good, but they record no striking advance. There are short accounts of the gastric changes associated with ulcer, carcinoma, gastro-enterostomy, biliary tract affections, and pulmonary tuberculosis. The illustrations include many good photographs taken with the author's gastroscopic camera. The book is a well-written, well-balanced account of the author's experience, set against the background of current German teaching.

The Dinosaurs

By W. E. SWINTON, Ph.D. London: Murby and Co. 1934. Pp. 233. With 25 plates and 20 figures. 15s.

Dr. Swinton has produced a readable and interesting account of that strange group of reptiles which occurred all over the world in triassic, jurassic, and cretaceous times and then disappeared for ever, just as mammals were beginning. Besides the desirable anatomical details of the different groups, there are supplied a number of pictures of reconstructed living specimens and throughout their structure is discussed as an indicator of their habits and modes of life. Many of them were small and possibly graceful beasts; better known are the "fearfully great" (as Owen put it) monsters weighing four or five times as much as a big elephant, which impress visitors to our museums. The most interesting chapter for the general reader is perhaps the one in which Dr. Swinton discusses the cause of their disappearance. Was it intrinsic or extrinsic? Did they grow too large and complicated? Were they too stupid (for in some of them the lumbar enlargement is bigger than the brain)? Did some animal arise that ate their eggs (actually found in Mongolia)? Or was there some development of destructive parasites? The author comes to no conclusion, but inclines to think that the scales were finally weighted against them by widespread geological and climatic changes.

MEDICAL SOCIETIES

SOCIETY OF MEDICAL OFFICERS OF HEALTH

AT a meeting of this society held at Upper Montagu-street, London, on April 27th, under the presidency of Dr. G. STANLEY BANKS, a discussion took place on the

Relationship of Measles and Whooping-cough to Chronic Inflammatory Conditions of the Chest

Dr. C. D. AGASSIZ dealt mainly with cases seen in a children's hospital. He said that non-tuberculous fibrosis of the lung in children was first demonstrated by Andrew Clark, W. J. Hadley, and Arnold Chaplin in 1896, and little further work had been done on the subject until comparatively recently. The subjects of this fibrosis might appear robust, but usually had some cyanosis of lips, cheeks, and ears, especially after exercise. Some had a dusky pigmentation, and others had a thickening of the nose. Anæmic children might not show cyanosis until the anæmia had been treated. Dr. Agassiz had found cyanosis present in half his cases, though in only one-third was the circulation affected. Blood oxygenation was definitely lowered. Clubbing of finger ends varied in degree. Cough was a main symptom in 60 per cent. of the cases; sometimes this was paroxysmal and recurrent, but was usually described as bronchitis. Expectoration was infrequent, occurring only in about 1 in 5 cases; the sputum was scanty and glairy and no tubercle bacilli were found in it, but occasionally streptococci and pneumococci. Hæmoptysis was comparatively rare, though sometimes half an ounce of blood might be coughed up. Dyspnœa was present in over 40 per cent. of the cases, exercise bringing on a degree of dyspnœa out of proportion to the effort. Poor lung expansion sometimes occurred bilaterally, but more often in one lung, the percussion note being impaired especially at the base. There might even be cavernous breathing, and sometimes when the child's mouth was open crackling râles could be heard. These children seemed particularly liable to what appeared to be broncho-pneumonia; there might be signs of lobar pneumonia, or febrile conditions with slight dyspnœa. At this period X rays showed certain characteristic appearances; the heart might be pulled over towards the affected side. In many cases there was a history of several bouts of so-called bronchitis or broncho-pneumonia, often of a persistent winter cough, and of an onset following measles, whooping-cough, or pneumonia. It was probable that the primary lung condition started with the measles or whooping-cough. About 44 per cent. of his cases gave a prior history of measles, 33 per cent. of whooping-cough, 31 per cent. of pneumonia. An important differentiating test was the Mantoux test, especially if negative. If it was positive, other factors must be depended on for distinction from tuberculosis. Non-tuberculous fibrosis could hardly be distinguished from pneumonia, if at the time of the examination the child had pyrexia associated with some consolidation. Where there was no pyrexia and no evident respiratory distress, the diagnosis from pleurisy or pleural effusion should not be difficult. It had so often been taught that measles and whooping-cough were precursors of tuberculosis in children that research should be undertaken. Some died in a pneumonic attack but for the most part the immediate prognosis was good; the remote prognosis was still unknown. A few patients developed bronchiectasis, but most recovered, at least as shown by signs and symptoms, and with the

growth of the child any unhealthy area of lung bore a smaller proportion to the whole. Of 42 cases which he had followed up for three to six years, only one died of pulmonary tuberculosis, one developed bronchiectasis, the remainder were fit for work or for school. In the few who developed tuberculosis this was of the slowly advancing fibrotic type. There was need for mass research work on the subject, which could only be thoroughly carried out at the large fever hospitals.

Dr. GEORGE JESSEL spoke from his experience of dispensary practice. Practitioners referred many cases of intermittent or chronic cough to tuberculosis officers. Often the illness had been preceded by measles or whooping-cough; in other cases attacks of those diseases might have occurred in forms too mild for recognition, the chest sequelæ being quite as serious. In 1933, in Dr. Jessel's area, 282 children were examined on account of chest symptoms; 83 of them gave a history of measles or whooping-cough. Of these 83, 5 were found to have pulmonary tuberculosis and 15 non-pulmonary tuberculosis. Of the 199 children who gave no history of measles or whooping-cough 4 had pulmonary tuberculosis, 37 non-pulmonary tuberculosis. Of the total number of 282 children 221 were non-tuberculous; 63 of these gave a history of measles or whooping-cough. Dr. Jessel's conclusions were that the children who had had measles or whooping-cough showed a slightly increased incidence of tuberculosis over those who gave no such history, and that this increase was in the pulmonary form. In earlier years radiologists interpreted as evidences of tuberculosis shadows which now were known to bear a different meaning; for example, heavy shadows at the root of the lung were not necessarily caused by active tuberculosis.

Dr. J. E. MCCARTNEY dealt with the pathological side. The serious inflammatory condition in the chest was the lobular or broncho-pneumonic condition; it was an extension of capillary bronchitis, and was most severe when involving the terminal bronchioles, as it was accompanied by an interstitial change. This peri-bronchitis was characterised by severe congestion, an outpouring of fibrin, and, later, an extension of the condition into the alveoli. Often as a result of this there was an occlusion of bronchi, followed by collapse and atelectasis. The consequent dullness was often thought to be due to consolidation. The interstitial pneumonia seen in measles presented a different picture, as in it there was practically no exudate; the capillaries tended to be dilated, the alveolar walls were tortuous, the alveolar tissue thickened, the fibroblasts were increased, and the lumen was occluded by an increase of interstitial tissue. Bronchiectasis was caused by three different factors—mechanical, infective, and fibrotic. The mechanical factor operated by partially blocking a bronchus, and expiration needed a special effort. When to the blocked condition infection was added inflammation supervened, with a weakening of the musculature and of the elastic tissue, so that the fibres were torn apart and became œdematous, and the cartilaginous plates were separated. Pfeiffer's bacillus was frequently answerable for this. The fibrotic factor was due to a contraction of the connective tissue, extending from the terminal to the larger bronchioles and to the bronchi. The primary damage done to the lung in measles and broncho-pneumonia was interstitial inflammation, extending upwards from the smaller to the larger bronchi; these became occluded, collapsed, and were replaced by fibrous tissue, and the contraction of the latter gave a train of sequelæ. Much could and should be done in the way of prophylaxis against measles. When the next epidemic occurs supplies of adult human serum should be obtained, attenuated, and used for measles contacts, the public meantime being educated to realise its advantages.

Dr. J. S. WESTWATER said that unfortunately the physician in fever hospitals did not see the end-results of his cases. In the last measles epidemic the results he had observed conformed to those set out by Dr. Jessel, and showed that measles did not deserve the bad name it had acquired. He had traced a number of cases for two to four months after they left hospital. He used the Mantoux test as a means of differentiation from tubercle. Respiratory sequelæ tended to occur in the younger children and in those of any age who had had pulmonary complication; also in those who, before measles, had had some respiratory illness. This seemed to him to suggest that even if measles was attenuated, chronic pulmonary infection would not be eradicated. One of the prime factors in these troubles, he considered, was vitamin deficiency. He had not found that whooping-cough usually jeopardised the child's future.

Dr. J. N. DOBBIE stressed the lack of resistance in the subjects of these children's complaints, and said some degree of rickets could often be found, though admittedly gross rickets was now much rarer than formerly. Some 70 per cent. of the children aged 5 in the London schools showed minor signs of rickets; and the earliest chance of the onset of the respiratory conditions under discussion was at the age when rickets was commonest and most serious. Prophylaxis against these complaints lay largely with maternity and child welfare centres.

Dr. V. FREEMAN emphasised the constitutional disturbances to the child afflicted with these respiratory diseases. Repeated attacks must lead to interference with the general growth; he had satisfied himself of this by an inquiry into the height-weight ratio at different ages and after different diseases.

The PRESIDENT said he had long felt that chronic chest disease in children was not occupying its due place in administrative and public health schemes; also that those who were dealing with such acute conditions as measles and whooping-cough did not quite properly correlate them with the sequelæ seen later. Of 100 children whose cases he had inquired into, 66 could be diagnosed as having chronic pulmonary catarrh or dry bronchiectasis; 60 gave a definite history of measles or whooping-cough, or both, and 6 had had pneumonia. Forty-two of them were negative to tuberculin tests, also to the Mantoux and von Pirquet tests. He agreed with what had been said about malnutrition in these children. In one industrial area he formed the conclusion that about 80 per cent. of all the children examined had some signs of rickets, possibly a general avitaminosis, of which rickets was only one manifestation.

Dr. AGASSIZ, in a brief reply, said a child with a rickety chest and a history of bronchitis probably had fibrosis, not tuberculosis. To attribute these chest conditions to vitamin deficiency was, he thought, carrying the cause too far back; but the connexion with measles and whooping-cough was very definite. The great need at fever hospitals was frequent X ray examinations and a follow-up of the cases.

Dr. JESSEL, in reply, said that in the provinces very few of these children came into hospitals, a fact which accounted for the small proportion of fibrotic cases found in them.

EUGENICS IN PRACTICE

A Series of Essays suggested by the Report of the Brock Committee

I.—MENTAL DEFECT IN THE COMMUNITY: IS IT INCREASING?

In considering any steps which should be taken to control mental deficiency in the community, it is obviously of the first importance to know the extent of the problem. The Royal Commission, appointed in 1904 to consider, among other things, the existing methods of dealing with the mentally defective, found at the outset of their inquiry that there were no statistics available concerning the incidence of defect in the community. They therefore caused surveys to be made in different localities and by this means they estimated the incidence to be 4·6 per 1000 in the general population. In 1924 the Wood Committee, appointed jointly by the Board of Education and the Board of Control, met to consider certain administrative problems. This time a much more extensive survey was undertaken and the incidence of mental deficiency was estimated at 8·6 per 1000. The relative proportions of the different grades were found to be approximately 5 idiots, 20 imbeciles, and 75 feeble-minded to every 100 aments. In both these surveys the incidence in rural districts was found to be significantly higher than the incidence in towns. Superficially, it appears that the mentally defective had doubled their numbers in the course of 20 years. This conclusion is, however, held to be invalid by many authorities. In both these surveys the total number of defectives was probably underestimated but, owing to greatly improved facilities for ascertainment, the alter survey was the more accurate.

The report (Cmd. 4485) of the Departmental Committee on Sterilisation, conveniently known as the Brock Committee, refers to the question of the extent of the problem in the following terms: "On this point the Wood Committee found it difficult to come to any definite conclusion, and we share their difficulty." The report goes on to state that the impression created by the statistics put before the Brock Committee is that the incidence of mental defect is increasing, though not rapidly. The increase may be due partly to better ascertainment and partly to improvements in the public health services calculated to keep alive defectives who would otherwise have died at a younger age. At the same time it is pointed out that there is no ground for the alarmist views expressed in some quarters that there is wholesale racial deterioration.

EXTENT OF DEFECT IS A MATTER OF DEFINITION

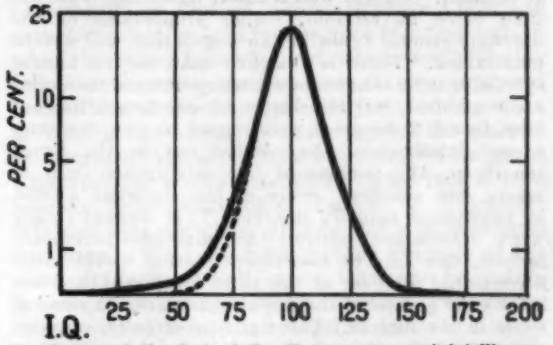
The definition of defect in the Mental Deficiency Acts is not based on mental tests, and authorities differ in their interpretation of the criteria by which it is judged. Though valuable to the administrator, the knowledge of the incidence of defect, as defined by the law, cannot be of much use in considering the problem genetically. As the Brock report states:

> "The definition in the Mental Deficiency Acts is based upon social adaptability, and the definition in the Education Acts upon educability. In other words, both statutory definitions rest upon the end result of the mental condition .... and not upon the clinical characteristics."

In other countries different definitions are used, but they are also subject to ambiguity. But, as Prof. R. A. Fisher points out, the educational criterion of deficiency is of greater significance than is the more sociological criterion of the Mental Deficiency Acts.

Thus the general distribution of ability in mental and scholastic tests forms a better basis for the genetic study of mental deficiency than the results of the surveys undertaken by the Royal Commission or the Wood Committee. Such investigations as that carried out by Burt (1921) on the London school population and the recent inquiry made by the Scottish Council for Research in Education (1933)[1] furnish us with suggestive material from this aspect. Unfortunately these surveys suffer from the disadvantage that many children at the upper or lower ends of the scale escaped observation. We can, however, infer from them that the distribution of intelligence, as judged by standardised tests, forms a continuous curve (shown in the diagram) from the lowest idiot to the cleverest scholarship child. The

Diagram showing distribution of intelligence among school-children



The figures at the foot of the diagram represent intelligence quotients (I.Q.): the upright scale denotes the proportion of individuals, per cent., who are distributed at the various grades of intelligence. The upright scale is logarithmic, so that the apex of the curve is very much reduced in height. The dark outline indicates the range of intelligence in the general community: it is not quite a normal probability distribution curve, since it is slightly skew towards the left. The dotted line indicates the limits of the distribution of intelligence found among ordinary school-children. The small segment of the total population to the left of the dotted line consists of the special school population, together with children whose mental grade is too low even for the special schools. The diagram shows (*a*) that there is considerable overlapping of I.Q. between the two groups to the left and right of the dotted line; and (*b*) that the proportion of children judged to be mentally defective depends upon where the dotted line is drawn. The diagram is based mainly on figures given by Cyril Burt in "Mental and Scholastic Tests," London, 1927, pp. 161–162.

curve approximates, though not very closely, to a normal frequency distribution. There is some irregularity in the lower part of the scale and poor mental endowment appears to be more prevalent than would be expected if ability were distributed symmetrically round a norm. Practically no idiots and few imbeciles can be said to come within the normal range, though probably many of the feeble-minded belong to it. In practice the line of demarcation between normal and abnormal intelligence must, however, be drawn arbitrarily and the incidence of mental deficiency varies according to where this line is drawn. The position of this line is partly determined by administrative considerations. In London, where the borderline is taken to be between the intelligence quotients[2] (or mental ratios) of 66 and 75, provision in the special schools is made for about 1·5 per cent. of the school population. Similar figures hold for many other towns. On the basis of statistics of normal

[1] The Intelligence of Scottish Children, Univ. of Lond. Press.

[2] In children the intelligence quotient (or mental ratio) is the ratio of mental age to chronological age expressed as a percentage. A fictitious maximum of 14 to 16 years is assumed for the chronological age of adults.

children it has been estimated that not fewer than 1·5 and not more than 3 per cent. of Scottish children fall below the boundary line drawn at an intelligence quotient of 70. In the future, when intelligence tests have reached a much higher standard of perfection than they at present enjoy, it may be possible to state exactly what proportion of children are below or above any given limit of mental ability. Until this is so we shall not be able to determine precisely whether or not mental deficiency, in a strict sense, is increasing.

REASONS FOR SUSPECTING AN INCREASE

The evidence for the increase of mental deficiency in the community is partly inferential. The following line of argument is worthy of attention. If the members of a given population mate with one another at random with respect to any given hereditary quality, the proportion of individuals possessing this character remains constant from generation to generation. On the other hand, if mating does not take place at random, stable proportions of the different genetic types in the population will not be maintained. There is evidence that, in the human species, mating is not random where certain characters are concerned, but the degree of assortation has not been found to be great with regard to any character except intelligence. As pointed out in the Brock report (p. 41), persons of like intelligence tend to marry one another. Some of the statistics quoted in appendices support this view.[3] If mental ability were determined entirely by multiple hereditary factors, this kind of assortative mating would cause a continual increase of the more intelligent and less intelligent groups of the population at the expense of those in the middle. The report, moreover, contains an account of a survey, instigated by the joint committee, which records, among other things, the mental ability of the children born to mothers or fathers judged by local authorities (or their representatives) to be mentally defective. The figures show that about one-third [4] of such children, on reaching maturity, are judged to be defective (p. 66); this conclusion applies equally whether the parents were certifiable under the Education Acts or the Mental Deficiency Acts. Now, if the incidence of mental defect is something like 1 per cent. and if mentally defective persons mate at random, it is unlikely, on general principles, that as many as a third of their children will be defective; it can be shown algebraically [5] that the proportion should probably be nearer one-tenth. Thus the high proportion of defective children born to defective parents is evidence for supposing that such persons usually select, for their partners, individuals whose mentality is not much greater than their own. This argument can only apply to defectives who are intelligent enough to live in the general community, and the conclusion is offset to some extent by the fact that idiots and imbeciles hardly ever become parents. The effect of assortative mating would be enhanced if the feeble-minded were especially prolific, but, as the Brock report states, "the supposed abnormal fertility of defectives is . . . largely mythical." All these considerations give some grounds for supposing that mental defect in the community is slowly increasing.

ENVIRONMENTAL INFLUENCES

We have so far been assuming that mental ability is determined only by heredity. Since the hypothesis is a very rough approximation indeed, the conclusion is also approximate. Actually, mental defect has many different forms and adverse environmental influences enter into the causation in a large proportion of cases. In a comparatively small proportion of instances the causation can be looked upon, for practical purposes, as entirely due to environmental factors (p. 19).

Since we are considering what reasons there are for the belief that mental deficiency is increasing, we may ask, to what extent environmental influences can determine fluctuations in incidence? On this topic the Brock report has little to say. The application of the principles of mental and physical hygiene may be reasonably expected to raise the general level of mental as well as physical efficiency in the community. A few principles can be formulated concerning special clinical types. The treatment of acquired syphilis, for example, should have diminished the incidence of amentia due to congenital syphilis during the last 30 years. Unfortunately there are no available figures by which to check this suggestion. Similarly, improved obstetrical technique may have brought about a decrease in the incidence of amentia due to birth injury. The causation of the special type of amentia, known as mongolism, is still a subject of discussion, but there can be little doubt that the maternal age at the birth of the child is the most important factor. If there is a growing tendency for women to marry later in life than formerly, then an increase in the incidence of mongolism is to be definitely expected. Encephalitis lethargica is now known to be an important cause of mental retardation, but the disease was unknown (or unrecognised) 20 years ago.

There remains the interesting problem of the rare diseases associated with severe mental deficiency which are known to be inherited in a fairly simple manner. Amaurotic idiocy is a disease which behaves as a Mendelian recessive, and other forms of idiocy or imbecility due to recessive genes almost certainly exist (p. 13). Natural selection would eliminate such conditions as these very slowly from the community. We can argue, from the fact that these diseases continue to exist, that they are sustained by a mutation-rate adequate to keep their incidence approximately constant. At present little is known about the causes of mutation in general, still less about these circumstances as applied to man. Here are to be found some of the avenues for future research (p. 53).

[3] See tables at foot of p. 102 and top of p. 83, which show that the number of families where both parents are defective is greater than would be expected from a random assortment.

[4] A close scrutiny of the figures in the tables suggests that many of the families were selected on account of the presence of defective children and that mothers of the same grade who had no defective children were not adequately represented in the sample. But even if the proportion were no more than one-fifth this would not alter the argument.

[5] Assume that mental grade depends upon multiple Mendelian factors. By a theorem of Fisher's, used in analysing physical stature, it follows that mental grade behaves approximately like an intermediate Mendelian character and that the heterozygote, or carrier, is intermediate between the normal and homozygous types. Call B the gene responsible for mental deficiency. Then the genotype AA is normal and has I.Q. (say) 100. The heterozygous genotype AB is dull and has I.Q. (say) 80. The homozygous genotype BB is defective and has I.Q. (say) 60. In a system of random mating these types have frequencies of $(1-x)^2$, $2x(1-x)$ and x^2 respectively, where x^2 is the incidence of defectives in the general community. If x^2 is equal to one in a hundred, these frequencies are as 81 : 18 : 1. (All this applies just the same if B is a recessive gene—as some people believe it to be—and the carrier has I.Q. 100 instead of I.Q. 80.) A mentally defective person, mating at random, 81 times out of 100, will choose a normal mate and there will be no defective children. In 18 cases out of 100 a dull mate will be chosen and, here, half the children will be affected. Once in a hundred matings both parents will be defective and all the children will be affected.

Hence, out of every hundred children having a mentally defective parent $(0 \times 81) + (\frac{1}{2} \times 18) + (1 \times 1) = 10$ children will be affected. That is to say, if the incidence of mental defect is something like one per cent., and if mentally defective persons mate at random the proportion of defective children born to a defective parent should average about one-tenth.

THE LANCET

LONDON: SATURDAY, MAY 12, 1934

PATHOGENESIS OF MAMMARY CANCER

THE experimental investigation of carcinogenesis in selectively bred strains of mice which is being carried out in the Institut du Radium in Paris is yielding results of exceptional interest. By selective breeding Mme. DOBROVADSKAIA-ZAWADSKAIA had succeeded in establishing strains with a very high or very low incidence of spontaneous cancer of the mamma in the female mice. The males never develop mammary cancer, not even in the strains with a high incidence. Last year we drew attention [1] to a short communication by Dr. A. LACASSAGNE in which he recorded the remarkable observation that the repeated injections of a pure preparation of folliculin into young males belonging to a strain with a high incidence of mammary cancer was followed by the appearance of mammary cancer in these animals. The tumours were sometimes multiple and appeared at a relatively early age. No such effect was then observed either in the males or in the females belonging to strains with a low incidence. The work has been continued and LACASSAGNE now reports [2] the frequent appearance after repeated injections of folliculin of mammary cancer, from 50–80 per cent., in animals belonging to two strains which normally have an incidence of only 2 per cent. The tumours appeared, however, not as frequently and at a much higher age in these two strains, between the tenth and fifteenth months, while in the strain with a high incidence 80 per cent. of the animals, including the males, had developed cancer between the fourth and the sixth months. A physiological difference observed between a strain with a high and one with a low incidence of spontaneous mammary cancer is that the œstrous cycle is much more prolonged and more regular in the former than in the latter, that the injection of equal doses of folliculin produces a more rapid and more intense vaginal reaction in the former than in the latter, and that the mammary hyperplasia produced by repeated injections of equal doses of folliculin sets in sooner and is more massive in the former than in the latter, both in the males and in the females. In the strains with a particularly high incidence of spontaneous mammary cancer the mammary tissue is therefore particularly susceptible to the action of folliculin. It is this factor of susceptibility—not the disease cancer itself—which is inherited; and it is this factor of susceptibility which is responsible for the exceptionally high incidence of spontaneous mammary cancer in these strains. Dr. W. CRAMER has pointed out [3] the importance of this factor of susceptibility in determining the incidence of cancer in man, but it must be borne in mind that while in man the total incidence of cancer is distributed over a number of organs, in mice it is focused mainly on one organ—viz., the mamma.

In response to the action of folliculin the mammary tissue undergoes hyperplasia corresponding to the hyperplasia induced in the skin of mice by some form of chronic irritation such as painting with tar or pure carcinogenic substances. A process of hyperplasia similar to that induced experimentally by the repeated injection of folliculin has also been found in the mammary gland of middle-aged and old mice in the course of their lives, as was shown 24 years ago by Dr. M. HAALAND in the fourth scientific report of the Imperial Cancer Research Fund. His figures show hyperplastic nodules composed of acini containing collections of stagnant secretion, which sometimes leads to a distension into cystic spaces. Another relevant fact which may be recalled here is the observation of Prof. N. GOORMAGHTIGH,[4] that the repeated injection into female mice of a preparation which he called folliculin, but which was probably less pure than that used by LACASSAGNE, produced a condition of the mamma closely resembling what is called in the human mammary gland the maladie de Reclus or Schimmelbusch's disease. Sir LENTHAL CHEATLE has drawn attention [5] to the fact that in women Schimmelbusch's disease is frequently followed by carcinoma. It is in fact a precancerous condition. We have here another example of the close similarity which exists between the pathogenesis of cancer in animals, whether spontaneous or induced experimentally, and in man.

The nature of the final step, the actual transformation of a normal cell into a malignant one, is as yet unknown. We do know however that this change occurs in one or several sharply circumscribed centres and not in all the cells of the mammary gland simultaneously. We also know from the work of E. L. KENNAWAY and F. W. COOK [6] that a close chemical relationship exists between certain carcinogenic substances—i.e., substances which produce cancer when applied repeatedly to the skin of mice—and to certain constituents and secretions of normal cells, especially œstrogenic substances. It is only a few years ago that a distinguished authority committed himself to the statement that cancer is a mystery the solution of which surpasses the wit of man. Such pessimism is out of date. Cancer will remain a mystery to those who look for a single factor as the cause of cancer: civilisation, diet, changes in hydrogen-ion concentration, cosmic rays, or what not. They ignore the mass of careful observations on animals and on man patiently collected during the last 30 years or more. But to those who take the trouble to inform themselves, these observations serve as a guide to an understanding of the disease as being the result of a multiplicity of causative factors acting successively and playing an essential part in bringing about the eventual transformation of a normal cell into a malignant one. We are entitled to assume that this final cellular change is essentially the same in whatever tissue it occurs. Only in this sense is it possible to

[1] THE LANCET, 1933, i., 594.
[2] Compt. Rend. de la Soc. de Biologie, March 3rd, p. 937.
[3] THE LANCET, Jan. 6th, p. 1.
[4] Bull. de l'Ass. Franc. pour l'étude du cancer, 1930, xix., 527.
[5] Cancer Review, 1930, v., 81.
[6] Proc. Roy. Soc. B., 1933, cxiii., 273.

speak of *the cause* of cancer and to admit that *the cause* of cancer is unknown. But the processes which lead up to this final stage may be different for each tissue and in this sense each tissue may be said to have its *causes* and its own specific pathogenesis.

THE ACTION OF LEAD ON THE KIDNEY

GENERALISED arterio-sclerosis is often seen in individuals who have long been exposed to lead, and chronic nephritis may also be observed. That these result from the action of lead cannot be proved, but their incidence in lead workers is high. Some have argued that such changes in the arteries and kidneys, occurring as they do in lead workers giving no history of attacks of colic or palsy, should not be attributed to lead but should be regarded as due to the same factors which cause decrescent arterio-sclerosis in persons not exposed to lead. Such reasoning is tantamount to demanding a history of delirium tremens in a chronic drinker before relating a cirrhosis of the liver to his alcoholism. Medical practitioners in Brisbane and other parts of Queensland have long held that chronic nephritis, terminating fatally in uræmia, is more prevalent in that part of Australia than it is in other parts of the world. In 1929 Dr. D. G. CROLL put this impression on a sound statistical basis by showing[1] from the death returns of the ten-year period 1917–26 that 1309 persons per 800,000 of the population died of chronic nephritis in Queensland before the age of 40, whereas in the other three States of the Commonwealth the number was 436, 421, and 418. A graph of the deaths in the various age-groups indicates clearly that a cause non-existent or non-operative in the other States was responsible for this strangely high mortality in Queensland, with its peak in the 30 to 29 age-group. It fell to Dr. L. J. J. NYE of Brisbane to relate this mortality to chronic plumbism in a work[2] which may be regarded as the most important contribution of Queensland to medical knowledge since T. L. BANCROFT discovered the adult filarial worm there 58 years ago.

Cases of wrist-drop and foot-drop were first described in Queensland children in 1892. In 1897 Mr. J. L. GIBSON began to come across weakness of the external recti combined with papillœdema, which he regarded as an early and therefore important sign of lead poisoning; in 15 years he saw 54 of such cases. In seeking a cause for the plumbism, NYE was led to examine closely the habits of the children. In Queensland houses are commonly built with verandas whose railings are of wood, which, especially in the neighbourhood of towns, are usually painted with white lead paint. In that semi-tropical climate the sun soon converts this paint into a powdery substance, which rubs off easily on the hands, and this has been found to be a soluble carbonate of lead. In the summer young children spend a large part of their time on the verandas, and the younger members of the families affected are generally in the habit of biting their nails or sucking their fingers. Among children a local pastime was discovered which consisted in licking the rain drops from the veranda railings. Quite recently Dr. S. F. MCDONALD, going over the same ground, accepted[3] the "paint-fingers-mouth" theory of causation as the best working hypothesis. As a rule, the patient first comes under medical observation early in adolescence, the history being that for years the child has not been as well as other children. In later stages this lassitude increases, and anæmia, vomiting, failing vision, and often epistaxis occur. Elevation of blood pressure is invariably present, and is accompanied by hypertrophy of the heart. Occasionally cerebral hæmorrhage resulting in hemiplegia has been observed. Retinal vascular changes, with engorgement of veins, hæmorrhages, exudate, and choked discs are commonly seen. Œdema is inconspicuous, and renal failure ending in uræmia is the usual conclusion.

A federal investigation published in 1932 upheld the contention that kidney disease in young people in Queensland is extraordinarily prevalent. It reached the tentative conclusion that the chronic nephritis common in Queensland arises, as elsewhere, as a result of many factors productive of kidney damage, including principally familial weakness of the kidney fabric, damage produced by congenital syphilis, and conditions set up as the result of the acute or prolonged action of toxins derived from pathogenic organisms. In Brisbane, in cases where such predispositions exist, the concurrent ingestion of infinitesimal doses of lead from an undetermined source appears in a proportion of cases to precipitate a fatal issue many years earlier than would otherwise be the case, weeding out the great mass of chronic nephritics before they attain the age of 40. Since whatever factor is operating in Brisbane appears to be operative also in several other cities of the Brisbane type, the possibility of lead poisoning being a factor in these areas, though it does not figure in hospital records, cannot be entirely discounted, but must be investigated before findings can be conclusive. The work on which these tentative findings are based is included in the full report submitted to the Director-General of Health in Canberra. NYE replied to the findings of the official inquiry by showing that after a careful review of the statistical, clinical, environmental, and experimental evidence which has been collected in the federal report and in his work, it must be admitted that lead poisoning in childhood is at least one factor which is responsible for the high rate of mortality from chronic nephritis in Queensland—a rate, however, which happily now shows some signs of abating. The amount of positive evidence incriminating lead paint is indeed so overwhelming that it seems almost perverse to insist on a further search for other causes before taking preventive measures against poisoning. NYE'S work emphatically teaches the lesson of the damaging effects of lead on young tissue and strengthens the demand that lead in

[1] Med. Jour. Australia, 1929, ii., 144; THE LANCET, 1929, ii., 830.
[2] Chronic Nephritis and Lead Poisoning. Sydney: Angus and Robertson. 1933. Pp. 145. 12s. 6d.
[3] Med. Jour. Australia, March 3rd, 1934, p. 293.

any form should be banished from places which serve as a playground for restless and meddlesome youth.

TUBERCULOUS EMPYEMA

ONE of the gravest complications of pulmonary tuberculosis is tuberculous empyema, but the outlook should not be regarded as hopeless even though secondary infection with pyogenic organisms has occurred. In some instances a pleural cavity previously full of tuberculous pus will remain dry after two or three simple aspirations or air replacements—a result as surprising as it is gratifying, for such exudate may be loaded with tubercle bacilli. In other instances pus containing pneumococci or other organisms in addition to tubercle bacilli may be sterilised by the injection of aniline dyes or replaced by gomenol oil or by a solution of gelatin containing euflavine as in the method advocated by Crocket. It is only when such methods as these fail, or when severe toxæmia proves that a pyothorax is of malignant type, that surgical intervention becomes necessary. The evacuation of pus, whether by closed or open drainage, is essential in such cases and the risks of further infection from without, of non-expansion of the lung, and of a permanent sinus must be incurred.

In a recent review[1] of the subject J. C. JONES and J. ALEXANDER describe the methods they have employed in the treatment of 70 consecutive cases, and their results are classified in four groups.

Group 1 consists of tuberculous empyema uncomplicated either by active tuberculous disease in the lungs or by the presence of secondary organisms. This, the most benign form, is unfortunately the least common. It usually yields to repeated aspirations which, needless to say, must be performed under strictly aseptic conditions.

Group 2 includes those cases of tuberculous empyema in which pyogenic infection has already occurred, but excludes those in which there is evidence of active tuberculous disease in the lungs. The object here is to evacuate the pus and to cause the lung to re-expand, and this may sometimes be accomplished by aspirations. Irrigations and the injection of antiseptics of the aniline group may assist in cleansing the pleural cavity. If these fail, closed or open drainage will be necessary, for if aspiration is frequently repeated sooner or later further infection will occur. Closed or open drainage should therefore be instituted as soon as it is evident that aspiration has failed. Phrenic avulsion by reducing its capacity will assist in the obliteration of the pleural cavity, but an extrapleural thoracoplasty is often necessary to complete its closure.

Group 3 includes tuberculous empyemata uncontaminated by secondary infection but associated with active tuberculous disease of the lungs. If simple aspiration with air replacement fails the physician finds himself on the horns of a dilemma. If he seeks to cure the pyothorax by bringing its walls into apposition, the ideal method in the treatment of all empyemata, he must either encourage expansion of a lung only recently collapsed as a therapeutic measure for the treatment of active disease, or he must bring the chest wall into contact with the collapsed lung. If there is still hope that the pulmonary disease may be arrested thoracoplasty is indicated, usually preceded by phrenicectomy. It is encouraging to note that of 21 such cases submitted to thoracoplasty 16 could be claimed as "cures," that is to say, obliteration of the empyema cavity was secured without the persistence of a sinus, while arrest of the pulmonary disease was indicated either by the absence of expectoration or of sputum containing tubercle bacilli.

Group 4 is composed of the gravest types of disease in which a secondarily infected tuberculous empyema is associated with active phthisis. An attempt may be made to sterilise the empyema by aspirations and irrigations, though it is only very rarely that this object is attained. Closed or open drainage is usually essential, and though re-expansion of a therapeutically collapsed lung may follow, such a result may even be desirable if the patient suffers from dyspnœa and if the contralateral lung is also the seat of tuberculous disease. In the rare instances in which the opposite lung remains healthy, drainage and irrigation may produce so great an improvement in the patient's general condition and so satisfactory a cleansing of the diseased pleura that a thoracoplasty may be undertaken with some hope of a successful result.

The authors maintain that the prevailing prejudice against operation in the treatment of tuberculous empyemata is not justified by their experience of the risks attaching to it. Though of the 70 patients 23 died only 6 deaths could be attributed to surgical interference, and the same number of deaths occurred among patients who had been treated by aspiration alone. Cures were attributed to thoracoplasty in 32 out of 43 cases so treated. Failures to secure the adequate drainage, upon the success of which the result of thoracoplasty at a later stage may depend, are often due to faulty technique. The drainage-tube may be inserted at too high a level, it may be too short or too long or too narrow, or its removal before the cavity is obliterated or thoracoplasty decided upon may lead to failure. A thoracoplasty may be too timidly undertaken or performed "in so few stages as to make the operative mortality frightfully high." On the other hand, it might be pointed out that there are limits to the endurance of patients, especially of patients whose morale has already been undermined by a lingering disease.

[1] Amer. Rev. of Tub., 1934, xxix., 230.

INTERNATIONAL MEDICINE

THE Milroy Lectures of the Royal College of Physicians of London are concluded this week; they have been expanded by the lecturer so as to bring the history up to date of international coöperation in public health, as represented by the general work of the health organisation of the League of Nations. Criticism of the League of Nations is common. The reasons why it has not done certain things which it has tried to do, as well as other things which it has never tried to do, are imperfectly understood, as is evident from everyday comment; but no one who has followed its work for international health can fail to see here much fine achievement. This is what we should expect, for the international nature of medicine is so clear to all that even the most ardent critic of the League of Nations, and indeed of any attempt at international understandings, will allow that coöperation to eradicate disease and to prevent its spread from one country to another is good for the world. Sir George Buchanan, a member since its foundation of the League of Nations Health Committee and our Government Representative at the Office International d'Hygiène publique, has been able in this series of lectures to tell a fine story of international endeavour.

ANNOTATIONS

A CLINICAL RESEARCH UNIT

A NEW departure in hospital practice is announced from the Middlesex Hospital, where a gift of £15,000 has been received from Mr. S. A. Courtauld to found a Clinical Research Unit. The unit will be under the direction of the medical school council, and its activities will be directed to the intensive investigation of selected diseases. Mr. Courtauld's generous and discriminating donation is the culmination of a magnificent series of gifts to the hospital and school, which he has already endowed with laboratory services fitting the institution to serve as a basis of this original and important departure. The unit will consist of small wards of 1 to 3 beds, in all 15 to 20 beds, and will be provided with clinical lecture theatre, test rooms, and offices, and be under the control of the heads of the Bland-Sutton institute of pathology, the Courtauld institute of biochemistry and the department of physiology, while the work throughout is to be conducted in collaboration with members of the staff as they happen to be particularly interested in any diseases or conditions upon which the investigations are being concentrated. A close link is thus forged between the hospital, the medical school, and the research laboratories, for the professorial staff will have direct contact with and share responsibility in the treatment of patients, the fruits of laboratory work being thus carried promptly into the wards. The relations between the clinical and academic staffs of the hospital will be strengthened. The patients, moreover, being in the care of the unit, will have the advantage of prolonged stay under treatment when it is found advisable; they will not lose by the compulsion that must exist in general wards to discharge patients at the earliest moment that they can be moved, their beds being urgently required. In particular those who are not responding to treatment will obtain the advantage of more specialised observation. This association of the medical school in the control over beds in the hospital, sharing in the ultimate responsibility of the Board for the patients, is almost a revolutionary departure, but it is one under which advantage should accrue to the patients concerned, to the students of the school, and, what is more important, to the development of medical science.

DIABETES IN CHILDREN

IT is still too soon to estimate the expectation of life in diabetics treated with insulin from childhood; but we can say at least that this disease has now become compatible not only with life but with normal development, growth, and activity. E. P. Joslin [1] has pointed out that whereas in pre-insulin days an elderly diabetic lived about five times as long as a diabetic child, the balance is now weighed in the other direction. Untreated, these children are quickly reduced to a state of cachexia and misery, and if they live sufficiently long are stunted and infantile; but with insulin and under suitable conditions they can hold their own with contemporaries and have every chance of attaining maturity and parenthood. This change in prognosis was considered in our columns on April 14th by Dr. R. D. Lawrence, and he showed that the result depends largely on the care with which treatment is carried out. Fortunately, however, habits are readily acquired by the young, and although strict dieting is never altogether simple, there is usually less alcoholic and dietetic excess to unlearn in childhood than in later life, while the relatively high carbohydrate diets now in vogue make the régime much less trying than formerly. The actual injection of insulin becomes with many children a routine which is hardly more irksome than cleaning the teeth or evacuating the bowels, and the measurement and administration of the drug can be undertaken by most normally intelligent children over ten. For those to whom the insertion of the needle remains a focal point of unhappiness, an ingenious automatic syringe has recently been devised by H. Busher [2]: the syringe, after being filled, is held under tension by a spring; the apparatus is "cocked," placed firmly against the skin, and released by touching a trigger; and the injection is thus effected, it is said, with great rapidity and a minimum of discomfort.

Granted ordinary care there remain various unavoidable complications—infections are far the most important—which may need special and efficient treatment if they are not to end with the patient in coma. In preventing such disasters it is obviously useful to have frequent blood-sugar and urinary examinations and trained assistance at the first evidence of ill-health; but Dr. Leslie Cole's paper, completed in our present issue, shows that good results can be got even in comparatively poor homes in an agricultural district, where hospital visits are infrequent and medical help is hard to come by. His case reports make very encouraging reading, since nearly all the children are within the ordinary limits of height and weight, show no limitation of physical or mental activity, and have developed normally, although in some of the older girls there has been amenorrhœa or irregular menstruation. When these things are possible under difficult conditions one cannot but feel that the outlook for the child with diabetes is really hopeful, and look forward to the time when something corresponding to insulin can be given without injection.

TRAUMATIC SHOCK

William Clowes in 1568 attributed the prostration following severe injury to the action of some noxious substance produced in the wounded area. A more complete knowledge of the anatomy of the circulatory and nervous systems led subsequent workers to seek an explanation in a derangement of one or both of these systems, but references to a toxic agent appear at intervals in the writings of the last four hundred years, and the toxic theory of shock did not reach its apogee until towards the end of the late war. Cannon and Bayliss [3] produced a state of traumatic shock in cats by subjecting one extremity to blows, when the blood pressure declined and in a brief space they died. As cause of death hæmorrhage could be excluded, for the weight of the damaged extremity showed that the local fluid loss was comparatively trivial. Section of the femoral and sciatic nerves or even of the spinal cord failed to prolong life, and it appeared, therefore, that a third factor must be concerned. It was known that injection of histamine—a substance which can be prepared from most animal tissues—causes a fall in blood pressure and death in the experimental animal, and Cannon and Bayliss came to the conclusion that this substance or some such product was

[1] New Eng. Jour. Med., 1933, ccix., 519.

[2] Jour. Amer. Med. Assoc., April 7th, 1934, p. 1152.

[3] See THE LANCET, 1919, i., 256.

absorbed from the traumatised area and was responsible for death. During the last ten years, however, much additional experimental work on these lines has been done in the United States and on the continent, and the toxic theory of shock has found few supporters. To A. Blalock, one of the most industrious investigators in this field, belongs the credit of having established the importance of fluid loss, not only in experiments of the Cannon and Baylisa type, but in trauma to the intestines and in experimental burns. He repeated the weighing experiments of Cannon and found that if a hindquarter amputation was done instead of a circular amputation of the limb a significant increase in weight could be demonstrated. In summarising his experimental [4] work he also gives an excellent résumé of the history of the subject and of its clinical aspects. He accepts the concept of primary and secondary shock, attributing the former to nervous inhibition and the latter to fluid loss into the traumatised area. Although no evidence of a toxin-formation has been discovered in any of his experiments, he retains this in his mind as a theoretical possibility. In discussing treatment he rightly emphasises the importance of preventive remedies such as warmth and an adequate supply of fluid. Experiment in what he terms "established" shock has been of little value. As he says in his concluding paragraph, there is at present no satisfactory treatment for shock which has persisted several hours.

THE EXTENSION OF LIFE

In a study of mortality in Great Britain and Sweden published in our issue of March 31st, the authors, Dr. Kermack, Colonel McKendrick, and Dr. McKinlay, found that the death-rates at ages have been declining in such a way as to suggest that the expectation of life is mainly determined by conditions obtaining during the child's earlier years. This raises the interesting problem (referred to in a leading article in the same issue) of how far it may be possible to predict future decreases of the death-rates at various ages, and thus calculate the real expectation of life of persons now living.

The extent to which life is likely to lengthen has recently been considered by Louis I. Dublin and A. J. Lotka in an inquiry into the history of longevity in the United States.[5] Large gains in longevity have, they show, been recorded in the last hundred years, and more particularly the last forty. The outlook for further improvement in the average length of life is, they think, entirely favourable, "since we have not yet fully availed ourselves of the knowledge which we now possess towards reducing mortality." To answer the speculative question of the ultimately attainable expectation of life, they have constructed a hypothetical life table, based fundamentally upon the New Zealand life table for females, 1931 (together with the experience of the Metropolitan Life Insurance Company among some of the more favoured classes of policyholders); for "it is surely reasonable to expect that what New Zealand is achieving at present we may hope to exceed in due course." On this basis they have assumed that ultimately the deaths in the first year of life may be reduced from the value of about 60 per 1000 which now prevails to the low level of 25. At age 1 they regard as possible a reduction of 10 per cent. from the mortality observed among females in New Zealand, 1931, while they adopt at older ages a slightly greater, and increasing, improvement, reaching 15 per cent. at age 21. They then assume that this reduction of 15 per cent. from the mortality of the New Zealand table is attainable for all succeeding ages up to 74, after which age considerably smaller improvements are predicted. Construction of a life table on this basis gives an expectation of life at birth of very nearly 70 years compared with 49 years in the United States life table of 1901 and with 60 years in the table of 1930. Comparison of the course through life of the populations in these three tables is of interest. The cohort of 100,000 persons born is reduced to three-quarters of its original number at age 24 in the 1901 table, age 49 in the 1930 table, and age 63 in the hypothetical table; one-half will remain at ages 58, 67, and 76, and one-quarter at ages 74, 78, and 83.

It might be maintained that the application of the New Zealand rates (still further reduced) to the population of the United States, with its large urban and industrialised areas, is too optimistic—that the Scottish authors are on safer ground in their observations of the past course of the death-rate and its regularity in the self-same area for which prediction is attempted. On the other hand, in the light of the experience among ordinary policyholders of the Metropolitan Life Insurance Company, Lotka and Dublin do not think that the values they have adopted for the United States are unduly favourable or incapable of eventual attainment. They see no reason why in the near future the "average" man should not be brought up to the level of the more favoured classes. If this optimism should prove well-founded the increasing proportion of old people in the community will have to be reckoned with more seriously in economic and social organisation. The coincidence of declining birth- and death-rates is shifting age-distribution to an extent that is not yet generally appreciated.

RETINAL ABIOTROPHY

The retina offers exceptional facilities for the study of developmental maladies, of which full use has been made. Some years ago the late Mr. Treacher Collins invited[1] his fellow ophthalmologists to regard retinitis pigmentosa not as the result of choroidal sclerosis but as an abiotrophy of the rods and cones with secondary involvement of the pigmentary epithelium. The term abiotrophy was introduced into general medicine by Gowers to connote the inherent low vitality of certain cells or systems of cells leading to early degeneration, and was lucidly explained by Mott in these words: "In contradistinction to normal senile decay are premature pathological processes of decay attacking groups, systems, or communities of neurons subserving special functions. . . . The neurons of a particular system die prematurely owing to an inherited or acquired want of durability. . . . ." The fact that retinitis pigmentosa is a familial disease in which heredity plays an important part is in favour of its being an inherited weakness innate in certain individuals and quite independent of inflammation or local vascular disease. Collins was able to show that advanced retinitis pigmentosa can exist without any serious involvement of the choroidal vessels. Mr. Arnold Sorsby has confirmed these findings and carried the conception of retinal abiotrophy further in a contribution to the recent ophthalmological congress. Another retinal disease which he finds best explained by the conception of abiotrophy is familial macular

[4] Surg., Gyn., and Obst., March, 1934, p. 551.
[5] Human Biol., 1934, vi., 43.

[1] Trans. Ophth. Soc., 1919, xxxix., 165.

degeneration. Here the pigment is central, and day blindness, not night blindness, is the prominent symptom. It is suggested that whereas in retinitis pigmentosa the rods are first affected, in this other familial disease it is the macular cones that give way first. Collins called it "retinitis pigmentosa at the macula." It has been described as occurring at different periods of life in different families—congenital, juvenile, presenile. Some of these cases are purely retinal. Others are complicated by cerebral degeneration. In either case the onset of the condition in children previously healthy, its familial character, and its steady progress stamp it as an abiotrophic process. Little is known of the pathology of Leber's hereditary optic atrophy, but there is evidence that it commences as a primary degeneration affecting either the papillo-macular bundle or the ganglion cells of the macula. Its character as an hereditary disease suggests strongly that it belongs to the group of abiotrophies. Similar arguments are used by Mr. Sorsby to explain some rarer conditions such as the Tay-Sachs disease, which attacks infants of the Jewish race, and certain forms of choroidal atrophy. A schedule, reproduced in an earlier issue,[3] distinguishes between unassociated retinal abiotrophy and cases associated with disease of the brain as in the Tay-Sachs disease, or of the skin as in degeneration of the elastic fibres associated with angeoid streaks of the retina (Gronblad's syndrome), or of the skeleton as in an interesting family group discovered by himself. Here, mother and five out of seven children were affected; besides macular coloboma in both eyes, there were present absence of nails, especially on the index-fingers and big toes, stunting, and even absence of phalanges, and tendency to bifurcation of the terminal phalanges of the thumb and big toe. Retinitis pigmentosa itself is sometimes associated with incurable deafness or with mental defect, which, as Collins suggested, are probably also due to abiotrophy, which picks out tissues which have attained a high degree of specialisation.

BIOLOGY IN THE SCHOOL CURRICULUM

A HEADMASTER of the old type used to say that if a boy was aware that he had either a body or a soul there was something the matter with him. The inference he intended to convey was that the physical and spiritual needs of his pupils were so well satisfied that they could disregard them and concentrate on other things. A hungry child is likely to become preoccupied with the needs of his body to the exclusion of everything else, and a child living in a state of unsatisfied curiosity is in a comparable condition. Biology is still given a casual reception in many schools, being lumped into the despised society of drawing and handicrafts. Miss B. D. Tyrrell, writing in the March issue of *Health and Empire*, has described a biology syllabus which has been followed for the last eight years in the Darlington Training College, a secondary school of over 600 girls. Sex instruction as such has no place in the scheme, and reproduction is emphasised no more strongly than any other vital function. The intention is, of course, that the children should regard reproduction as a natural and inevitable function like breathing—an excellent principle, but one which sometimes does not work out in practice. Children rarely use their powers of deduction except under the influence of a hint, and they can listen intelligently to information about stamens and gynæceums without observing any relevance to human reproduction. The syllabus outlined by Miss Tyrrell, if it is followed, is explicit on this subject as on others. It is allowed that on the whole the best girls work at classics, and finish their study of biology before they have touched zoology at all. Moreover, as she admits, few examiners expect a candidate to have covered the whole syllabus, so that much depends on the personal bias of the teacher. Before the age of about thirteen the girls receive instruction in general experimental science and chemistry only. For a year, while in the lower Vth, they are taught botany for one hour and twenty minutes per week. At the end of the year those who go on the classical side, "picked people on the whole," never study biology again unless they return to the science side in the VIth form. The aim is "to lay foundations of biological science by emphasising (*a*) interdependence of form and function, and (*b*) adaptation of form (expressing that function) to environment and to seasonal change." The chances of doing this during one hour and twenty minutes a week in the course of a single school year seem rather remote, but even a smattering of botany is better than no biology at all. The girls who go on the science side naturally have a greater chance of grasping these principles; they attend demonstrations of animal structure as seen in amœbæ, earthworms, butterflies, fish, and amphibia; in the upper Vth they study the anatomy of birds and mammals, and follow a revision course which emphasises the essential resemblances between plant and animal life. During their post-matriculation year opportunities are given for free discussion of evolution and elementary genetics. The syllabus aims at giving the children a general idea of vital functions. We must wish here that the time allotted to this part of education was more generous. But, considering that many schools devote no time at all to biology, we must commend a restricted course.

VETERINARY SCIENCE AND JOHN HUNTER

THE name of John Hunter is as much revered in the veterinary branch of medicine as on the human side; for the part he played, as one of the original founders of the Royal Veterinary College, was the stepping-stone of the veterinary science of to-day. The subject was recently brought before the Hunterian Society by Sir Frederick Hobday, the present dean of the college, in an address illustrated by means of lantern and cinema, embodying details of what has happened in the Camden Town school between its commencement in 1791 and the erection of the present day modern buildings, some of which (operating theatres and hospital for small animals) are already completed. Prof. Hobday prefaced his address by a tribute to the help which was given by certain members of the medical profession, mentioning especially the names of John Hunter, Drs. Clive, Baillie, Cruikshank, Home, Cooper, and Wilson, who opened their classes to the veterinary students who entered for their courses of study at the new institution. He paid special tribute to the keen powers of observation which John Hunter showed when writing upon certain lamenesses and other ailments of the horse, and drew particular attention to the classical surgical gland and other transplantation experiments which have now passed into the category of everyday operations in the routine of the modern veterinary consultant. His attention had been given to such equine ailments as "roaring" (due to paralysis of the left vocal cord) and "broken wind" (asthma) which he accurately differentiated in regard to their respective sources of origin; and his "Essays and

[3] THE LANCET, April 21st, p. 849.

Observations" contain much which can be read with interest by those who see a future in the study of comparative medicine to-day. The lecturer, in conclusion, suggested the establishment of a branch of the Hunterian Society amongst the graduates and students of the Royal Veterinary College, stating that the veterinary profession owed a great deal to the memory of John Hunter "for the part he played in the start of its oldest veterinary college; and that, knowing the reputation he bore for thoroughness in all he did for the science he loved so well, it was a great calamity to our progress that he did not live at least some ten years longer."

In the remarks which followed the lecture, Dr. Bullock, the registrar and librarian of the Royal College of Veterinary Surgeons, gave interesting extracts from some unique books in the college library which bore tribute to John Hunter and the part he had played in the foundation of the veterinary profession.

AN EMPIRE DAY APPEAL

AT the Mansion House meeting held in support of the British Empire Cancer Campaign on May 1st, the Duke of York who presided said the purpose of the meeting was to inaugurate an appeal on Empire Day, May 24th. He recalled the hope he had expressed ten years previously that the shadow of the great fear of cancer was slowly but surely lifting, although much remained to be done. The policy of the campaign all along had been not to husband its resources but to meet every reasonable call made upon it in aid of cancer research. Lord Horder, who proposed a vote of thanks, said he was sure that the solution of the problem of cancer would yield to careful observation and patient research. Sir Hilton Young remarked that cancer now took the second place in the list of fatal diseases and justified the campaign in its primary task of promoting and coördinating research on the causation of cancer. Prof. W. S. Lazarus-Barlow, vice-chairman of the investigation committee and chairman of the appeal committee, spoke of the change in the type of investigation during the 30 years in which he had been associated with cancer research; it must not be thought, he said, that the paths pursued for 30 years had proved fruitless. The extension of the criterion of success—namely, freedom from the disease—from three to ten years showed a sense of growing mastery over the enemy. The associations and affiliations of the campaign throughout the British Empire and its friendly relations with cancer research organisations abroad entitled the campaign to national and imperial support. It was announced that the King and Queen and other members of the Royal Family had sent donations to head the Empire Day list. In response to the Duke of York's words the appeal committee of the B.E.C.C. has arranged for appeals at 1000 centres on May 24th.

GASTROSCOPY

THE flexible gastroscope which was recently described in these pages [1] has made its début in America, and E. B. Benedict has made a preliminary report [2] on its use in the Massachusetts General Hospital, where 75 gastroscopies have been smoothly carried out. The instrument is in routine employment in many German clinics, but little has yet been heard of it from other countries. The reason is probably a certain hesitation about its value in diagnosis. It is clear from the German experience that, in general, gastroscopy offers no advantage over radiography in the recognition of gastric ulcer and gastric carcinoma, and it is never likely to become as necessary as cystoscopy. On the other hand it enables inflammatory and atrophic changes in the gastric mucosa to be seen much more clearly than by even the best radiological technique, and chronic gastritis can therefore be defined with greater precision than heretofore. Since the pathogenesis of chronic gastritis may well be the key to the prevention of more serious conditions, a new method for its investigation is to be welcomed. Benedict's experience so far bears out the German claim that gastroscopy with the Wolf-Schindler flexible gastroscope is an "easy, harmless, and profitable procedure."

[1] THE LANCET, 1933, ii., 813, 389.
[2] New Eng. Jour. Med., March 29th, 1934, p. 670.

CHILD GUIDANCE IN AMERICA

SINCE 1922 when the Commonwealth Fund of New York first turned its attention to mental hygiene seven major child guidance clinics have been founded directly through its agency, and support has been given in this country (in the words of the fifteenth annual report) "to finance activities which are still too novel to command full support from the British public." The London Child Guidance Clinic, now in its fifth year, is still liberally supported by the Fund, although as a measure of economy the parent Institute for Child Guidance was closed last summer, after it had offered training during the six years of its existence to 32 psychiatrists, 15 psychologists, and 289 psychiatric social workers. It should be of interest to discover what form the child guidance movement is taking in the land of its origin, and in this we have the help of Dr. D. N. Hardcastle, who has reported [1] after spending three years studying clinics in America. The lines of approach and the goals of treatment he finds still in a state of flux, and wide variations in philosophy are evident; some clinics are content with a simple evaluation of their problems and are almost didactic in their therapy, others attempt to analyse all their material, whether parents or children. Asked "what is the potential position of the general medical practitioner with regard to the child guidance clinic, and can his services be utilised?" 10 out of 12 clinics referred to the general lack of psychiatric education, and the practitioner's inability to coöperate; 3 clinics thought that when adequately trained the practitioner should treat the bulk of the patients who now come to the clinic, and 2 considered that he could then coöperate in psychiatric treatment. Five replies reported close coöperation on the physical side only of the patient; only one speaks of all-round coöperation. Three clinics, however, enjoy the coöperation of children's specialists; one regards itself as in opposition to medical practice. To the question whether non-medical persons should be able to refer cases, 11 out of 12 clinics definitely said that they should; 2 of them refrained from treating cases so referred until the practitioner had been informed and his permission given. In another question Dr. Hardcastle embodied the criticism so often heard, that the child subjected to a team of people loses all chance of a personal psychiatric contact. Eight replies point out that the child has a much closer contact with the psychiatrist than he would have in any other form of medical treatment; the parents are not present, for they are seen by the psychiatric social worker. One detailed reply states that 55 per cent. of cases have dual attention, the psychiatrist treating the

[1] Brit. Jour. Med. Psych., 1933, xiii., 328.

child and the social worker his environment; in 26 per cent. the social worker alone goes into the home and environmental conditions, and in 19 per cent. the psychiatrist works with the child direct. Another reply suggests that a child in a general hospital ward would come in contact with far more doctors and nurses than the two or three contacts it makes at the clinic; yet another cites the number of contacts which a child might make among police, probation officers, and others if it did not attend the clinic. On the subject of treatment, 10 clinics claim to use the technique which will best suit the child and to employ all available facilities to create a friendly feeling; full use is made of psycho-analytic knowledge, but analysis is not practised. One reply stresses the danger of the psycho-analytic approach and another says that a small group of selected children are undergoing analysis. This question was less productive of controversial thinking than any of the others; Dr. Hardcastle suggests as a reason for this that the technique of treatment is as yet little developed in the clinics. A postscript to the paper gives the views of the director of one of the clinics who read the replies. This psychiatrist claims that the progressive clinics have recently evolved a more flexible approach and a much freer attitude towards treatment, the responsibility for having it or not being put wherever possible on the parent.

TREATMENT OF SEXUAL OFFENDERS

THE problem of dealing adequately with persons who appear before the courts charged with sexual offences is as much a legal as a medical one. Mr. Claud Mullins, in a lecture before the Medico-Legal Society on April 26th, pointed out a few of the almost incredible anomalies in the law governing these offences. For instance, the exhibitionist must be dealt with under the Vagrants Act, 1824, along with persons who persistently tell fortunes and run away. Apart from the fact that he is more than a mere social nuisance and needs to be dealt with in a different manner, his offence may actually be much graver than other offences which happen to be regarded more severely. For instance, Mr. Mullins related two successive cases which he had tried on one day. In the first, an exhibitionist had shocked and insulted two small girls; in the second, two men were charged with gross indecency in a public convenience. Of the two offences the former seemed to be by far the more serious. Yet the second comes under the Criminal Law Amendment Act, 1885, and the offender must be committed for trial. The practical administration of the law was better than might have been expected. This particular exhibitionist, having 12 previous convictions, could be given six months, and a solution for the problem of the second case was provided by a convenient by-law of the London County Council imposing a fine of £5 or under for committing an act of indecency with another person.

As an example of the comparative severity with which the law visits various offences, Mr. Mullins remarked that stealing of any kind can be punished with five years' penal servitude, and if committed in a dwelling-house, with 14 years' penal servitude. Perjury is punishable with seven years' penal servitude. On the other hand, if a man detains a woman in a disorderly house against her will or commits an indecent assault upon a girl of 13, the maximum penalty is two years only. A woman who procures an abortion on herself may be sentenced to penal servitude for life, but the penalty for a man who has carnal knowledge of an idiot or a mental patient in hospital is only two years. The severity of the law towards what are known as unnatural offences is probably, he suggests, based on the religious horror which this conduct excited in the Middle Ages and which modern research has shown to be quite misplaced. The punishment is far greater than that awarded for incest, and juries, with a surer instinct for justice, have returned verdicts sometimes incomprehensibly favourable to the accused. Mr. Mullins is convinced that sexual offenders need something more than mere retributive punishment, but disbelieves in the customary dichotomy of punishment and treatment, holding that punishment is often a valuable therapeutic measure. In this opinion he is supported by such experienced psychiatrists as Dr. James Rees and Dr. J. A. Hadfield. Prison will, he thinks, remain indispensable for some offenders if only to prevent an outbreak of lynch law, though prison has not given encouraging results as shown by the figures for recurrence. He considers that an indeterminate sentence based on the progress of the offender in prison is more likely to produce good results than a sentence fixed by the court on unscientific grounds. As measures of reform he advocates that the large remand prisons should have medical psychologists on their staff, so that a report on the condition of an offender could be available between conviction and sentence; that the prison authorities should have a statutory right to report on any case between verdict and sentence whether the court desired a report or not; and that time should be given for inquiry and report in all cases before sentence is passed. Although flogging as a preliminary to and part of an extended period of training may possibly be defended, Mr. Mullins strongly condemns this punishment in conjunction with or as an alternative to imprisonment.

The only real solution of the problem will, he holds, be found in preventing the kind of people who become sexual offenders from ever being conceived. In addition, he suggests that the law should be altered to be less hard on abortion and homosexuality, and harder on the wanton spreading of venereal disease and the promiscuous begetting of children by delinquents and defectives.

AT a meeting of the Royal Society, on May 3rd, Prof. Otto Warburg was elected a foreign member. Prof. Warburg, whose work on cell metabolism won him the Nobel prize for medicine in 1931, is director of the Kaiser Wilhelm Institut für Zellphysiologie, at Dahlem, Berlin.

THE series of articles on Prognosis contributed by invitation will be resumed early in June, when publication of the five concluding lectures on the Preventive Aspects of Medicine at King's College has been completed.

ST. MARY'S HOSPITAL, PADDINGTON.—The Duke of York presided last week at a dinner in aid of the building fund of this hospital. A sum of £105,000 is to be raised for building a new nurses' home and a pay-block, and the Duke stated that an anonymous donor had undertaken to double every pound received up to £15,000. It was afterwards announced that the £15,000 had not only already been exceeded and the promised similar sum paid over, but that the anonymous benefactor had offered to double amounts received up to Christmas next to the extent of a further £25,000. The result would be that provided the stipulated sum was subscribed in full, the whole of the £105,000 would be available by the end of the year.

THE PREVENTIVE ASPECTS OF MEDICINE

A Series of Lectures at King's College Hospital Medical School, to be completed in the Summer

XXI.—PREVENTION OF VENEREAL DISEASES

I CANNOT here make more than scanty reference to the efforts of public authorities in the past to prevent the spread of venereal disease. You may, however, gain an idea of the age of the problem from the instructions contained in Leviticus, Chap. xv., for preventing the spread of a disease described as a running out of the flesh (or a running of the reins) which I think everyone agrees must have been gonorrhœa. After ordering that everything the patient touched should be regarded as unclean and treated accordingly, Moses instructed (v. 13) that when he was cleansed of his issue he should number to himself seven days for his cleansing, &c. Nowadays we spread the tests of cure over a considerably longer period than that, and one wonders how many relapses occurred.

In Numbers xxv. there is some evidence that Moses had trouble from an outbreak of venereal disease in the tribes of Israel on the journey from Egypt when they were encamped in Abel-Shittim because they committed whoredom with the Midianitish women and in consequence had a plague which destroyed 24,000 people, but what was the nature of the plague and whether or not the 24,000 included those executed for joining in the Dionysiac orgies attendant on the cult of Baal-peor I am uncertain. At any rate, Moses seems to have thought the plague a consequence of venereal contact because later (Numbers xxxi.) when an expedition against the Midianites had resulted in the capture of all the Midianite women and children he ordered all the male children and all the women who had lain with men to be slain because these had "caused the children of Israel, through the counsel of Baalam, to commit trespass against the Lord in the matter of Peor, and there was a plague among the congregation of the Lord."

The history of the world since that time contains many references to the efforts by public authorities to prevent the spread of venereal disease. They consisted mainly of expulsion or isolation of the diseased from the community, and regulation, with medical examination, of prostitutes; but except in Denmark or Sweden little or no attempt appears to have been made to render the infected non-infectious, and it was not until 1916 that the problem began to be attacked on rational lines.

Methods of prevention which are practised to-day by one country or another may be discussed under the following headings:—

(*a*) Efforts to reduce the amount of extra-marital intercourse.
(*b*) Regulation of prostitution.
(*c*) The use of preventives against contact with infectious secretion during sexual intercourse.
(*d*) Disinfection of the contaminated parts after exposure to infection.
(*e*) Prophylactic general treatment before exposure to infection.
(*f*) Prophylactic general treatment after exposure.
(*g*) Treatment of carriers.

EXTRA-MARITAL INTERCOURSE

Efforts to reduce the amount of extra-marital intercourse do not fall within my province, and I will say only that, in my experience, the two most powerful incentives to it are boredom and the ounce or so of alcohol drunk usually on some special occasion over and above the normal intake.

In the armed forces I am sure that the provision of healthy recreation has done much to reduce the incidence of venereal disease. With the provision of recreation goes education which promotes a wider interest in affairs and is consequently a means of preventing boredom. I expect to be told that all the recreation and all the education in the world does not prevent extra-marital intercourse. That is true, but such things do reduce it, and there would be very little work for the venereal specialist if it depended on the result of lapses by healthy, normally temperate men with a taste for exercise and sufficiently educated to be interested in a variety of things other than wine, woman, and song. The extra dose of alcohol seems according to my experience to be a potent incitement to those things which result in venereal disease, and when I have had the duty of advising a young man on methods of avoiding trouble I have always said that when he finds himself in a company and circumstances which seem likely to result in his taking more alcohol than he would consume normally, he should try to keep his head and remember that the greatest danger of occasional alcoholic excess lies in its incitement to sexual intercourse.

PROSTITUTION

Regulation of prostitution is a method of preventing venereal disease which has been tried for centuries and there is still a large body of opinion in its favour. I expect that the average layman in this country thinks that we are terribly backward in not imitating those countries where registered prostitutes have to undergo a periodical examination and be interned when they are found to be diseased. In this country there appears to have been only one experiment with regulation of prostitution and that was in force only in certain military stations. The Contagious Disease Prevention Act under which it was worked came into force in 1864, but aroused such fierce opposition that it was suspended in 1883 and repealed in 1886. The natural question is why we have practically never favoured what seems at first sight to be a common-sense method of preventing venereal disease and why one country after another has abandoned it, a notable example being Germany in 1927. The reasons are manifold and are set out fully in Flexner's classical work "Prostitution in Europe."

In the first place the stricter the regulation the greater the amount of clandestine prostitution, so that for one registered prostitute undergoing periodical examination there may be ten or more unregistered practising their profession secretly under the guise of chambermaids, waitresses, singing-girls, and so forth. The danger under a regulationist system is that when these women become diseased, as they must do sooner or later, they conceal their disease for fear of their coming under the notice of the police and becoming inscribed.

Assuming, however, that clandestine prostitution could be abolished one may reasonably ask if periodical medical examinations and segregation of women found to be diseased would provide an adequate safeguard. In my opinion, and that of numerous authorities on this subject, it is unlikely to do so because of the difficulty of deciding the question of non-infectivity. Even if one spent half an hour or longer over the examination of each woman and took all necessary specimens for laboratory examination, one could not guarantee that the woman was free from infection, or would not become infected within a day or two following the examination. Such a lengthy examination is generally impracticable because of the numbers of women to be examined and the smallness of the staff usually provided for this work. In such circumstances they have

to rely on naked-eye examination, a very poor test, as I proved once in a regulationist town by microscopical examination of secretion from a number of women who had been passed as non-infectious by the medical examiner.

It is only fair, however, to say that, in certain circumstances, regulation of prostitution can be effectual. Many years ago it was part of my work to carry out a regulationist system in another country. I quickly came to the conclusion that medical examination was practically useless and adopted a procedure based on the assumption that the women were all diseased and gave them daily treatment in such a way as to reduce their infectivity to a minimum. The result was a complete abolition of infections from that quarter, but that line of action would obviously not be practicable in this country.

Some notice is also due to a report by P. Mulser of Hamburg (1933) eulogising the strict regulationist methods practised in Italy and Greece, and contrasting them with the methods at present practised in Turkey, where brothels are being reduced and private prostitution is said to have increased considerably, with resulting increase in the incidence of venereal disease. In Italy, according to Mulser's account, the private interests of registered prostitutes are protected, they are examined on scientific lines, and brothels are provided with prophylactic appliances, while clandestine prostitution is hunted remorselessly.

Again, E. Lepinay (1926) has reported favourably on the regulationist measures in Casablanca, where a prostitutes' quarter, five acres in extent, was built by the municipality and provided with cinemas, dance halls, cafés, &c. It was walled in and provided with only one gate. Prostitutes entering this quarter are put under strict control, with complete medical examinations, prompt and efficient treatment on detection of disease, and, in addition, daily douching plus the application of medicated tampons in the case of the practising women. According to Lepinay, on first arrival 53 per cent. of the women are found diseased, 8 per cent. with contagious syphilis and 45 per cent. with gonorrhœa or chancroid. In contrast with these figures only 15·2 per cent. of the resident prostitutes are diseased, this being made up of 0·2 per cent. contagious syphilis and 15 per cent. gonorrhœa or chancroid.

The reconciliation of the divergent opinions on regulation of prostitution as a means of preventing venereal disease seems to lie in the degree of control of the population. With perfect control, a sufficient medical staff, and liberal provision of prophylactic disinfectants on the premises, regulation may work; but where there is greater freedom of the population or/and there is an insufficient medical staff it is not likely to prove of any value, and this explains the fact that it is gradually being abandoned.

TRANSFERENCE OF ORGANISMS

The next measure for consideration is the use of agents which will prevent the passage of the micro-organisms from one person to another. I mentioned measures of this kind which can be taken by women when speaking of regulation of prostitution and will now only express my view that, if women who are promiscuous in sexual intercourse would adopt such precautions, the chances of disease passing from them to their male partners and vice versa would be reduced very considerably. If, for example, we could get all women with gonorrhœa under a well-planned daily treatment, I think we should soon begin to see a decrease in the incidence of gonorrhœa.

On the men's side the measures are the previous application of an antiseptic ointment and/or the use of a condom. Both have been strongly advocated, and neither is at all popular, for possibly obvious reasons. A condom certainly confers a large measure of protection, especially against gonorrhœa, provided that it is removed in such a way as not to contaminate the parts it has covered. It is useless, of course, against syphilitic infection of the parts not covered, and I have often guessed rightly that a patient with a chancre at the peno-scrotal angle had worn a condom. Altogether, one would say that the universal use of condoms in promiscuous sexual intercourse would reduce very considerably the incidence of venereal disease.

DISINFECTION AFTER INTERCOURSE

Disinfection after exposure to infection is a measure which has aroused more and fiercer controversy than probably any other which has been advocated for the prevention of venereal disease. On the one hand some of its more ardent advocates claim that, if it could be made universal, being encouraged heartily by public health authorities, venereal disease would quickly reach the vanishing point. On the other hand, its opponents say that, if the public authorities were to advocate such measures, it would imply some guarantee of safety and would encourage promiscuity, and that since no method of disinfection has yet been found which in the average layman's hands and in the usual circumstances of such sexual intercourse gives even a high percentage of safety the increased promiscuity would result in an increase of venereal disease. The advocates of disinfection propaganda reply that promiscuity would not increase and that even with the failures the net result would be a decrease of venereal disease.

On this point everyone will hold his own opinion. My own is that fear of venereal disease is a substantial deterrent from irregular sexual intercourse and that, if a man has in his pocket a prophylactic outfit of the pattern recommended by a public health authority, he is much more likely to accept the invitation of the lady of easy virtue than if he were not so provided.

I was once a whole-hearted believer in the value of self-disinfection as a means of preventing venereal disease. Knowing the comparatively low resistance of the gonococcus and of *Spirochæta pallida* to antiseptics, it seemed to me that it would be an easy thing to kill the infection by applying an antiseptic immediately after exposure. But after 18 months experience of it in the Army I came to the conclusion that effective disinfection was not so simple as it had seemed and that, although it might eventually work in a disciplined community, it was not likely to affect any reduction of venereal disease in such an undisciplined community as the civilian population, who could not be instructed so closely and personally as could men under discipline. Since then I have studied with particular interest the statistics relating to its effects that have been published from time to time by the naval and military authorities and can say fairly that nothing in them has altered my opinion as to the probable inefficacy of disinfection methods applied by leaflet and the sale of outfits to the civilian population.

The constant lament of the reporter of statistics bearing on the efficacy of disinfection is that the men will not carry out the instructions properly, being either too drunk or too stupid to understand them. In our army facilities for self-disinfection have been available since the latter end of the war, and the incidence of venereal disease has become very greatly reduced; but one cannot say that it is in consequence of self-disinfection, because other factors have played a part—the better education of the men, the lower consumption of alcohol, improvements in feeding and recreation, and reduction of the incidence of syphilis in the civilian population.

The same troops, though provided with the same outfits for disinfection and probably instructed more intensively than at home in the use of prophylactic outfits, when

transferred to stations abroad where venereal disease is more rife than here, show a decided increase in the incidence of venereal disease. Thus the report of the Army Medical Department for 1932 shows the following rates of incidence per 1000 per annum in British troops stationed in different parts of the world. At home, 11·2; India, 37·7; Aden, 61·3; Bermuda, 8·9; Ceylon, 95·2; China, 128·9; Egypt, 41·9; Gibraltar, 40·6; Jamaica, 68·3; Malaya, 42·7; Malta, 12·1; Mauritius, 64·6.

It does not appear from this that even in a well-disciplined, well-lectured community self-disinfection reduces venereal disease to the vanishing-point. The probable explanation is that the ideal antiseptic for this work has not been found. Some years ago the Trevethin Committee which sat on the subject of prevention of venereal disease suggested that the Medical Research Council be asked to advise on the composition of an outfit which a local authority could recommend with confidence; but the Medical Research Council declined the invitation, and so far no other responsible authority has been persuaded to undertake the task.

In conclusion on this section of the subject I should like to quote from my summary in *Bulletin of Hygiene* (1933, viii., 546) of an article by Parneix (1933) on his experiences in prophylaxis of venereal disease on a French despatch boat during a two-year tour in the Far East. Parneix concludes that the methods of personal prophylaxis employed proved useless in the prevention of gonorrhœa and soft chancre but succeeded in the case of syphilis.

The methods were as follows. On going ashore every seaman was supplied free of charge with a gelo-tube outfit which he had to show to the officer passing the shore-leave men. On return to the ship any man in a state of intoxication was taken to the prophylactic cabin, which was also open to sailors who had had connexion when ashore. The treatment there was given by a sick-bay quartermaster, who injected into the urethra 5 c.cm. of a 10 per cent. solution of Argyrol, which was retained for some minutes, and anointed the parts well with ointment of Gauducheau's formula (mercury cyanide, 125 mg.; thymol, 1·75 g.; calomel, 25 g.; excipient, 73 g.

Contraction of venereal disease after neglect to take these precautions was punished with imprisonment for ten days. Careful instructions in the use of the gelo-tube outfit were given, and in addition men were advised to use a condom, on the grounds that the gelo-tube was useless against gonorrhœa and soft chancre, though protective against syphilis. The men would not use the condoms.

In 23 months 957 prophylactic treatments were given, and the numbers of venereal disease cases were 47 gonorrhœa, 32 soft chancre, and 2 hard chancre in a crew not exceeding 110 men. From the total of 81 cases should be deducted 23 in which no precautions were taken. The remaining 58 cases had taken precautions as shown below:

Precautions.	Cases of— Gonorrhœa.	Soft chancre.	Syphilis.
Only on return	5 ..	2 ..	1
Gelo-tube	10 ..	2 ..	0
Both gelo-tube and on return	23 ..	15 ..	0

With reference to the question of protection against gonorrhœa, Parneix mentions the case of four officers who took the most careful precautions immediately after the risk, washing with soap and water and applying the ointment according to directions, but three contracted gonorrhœa. One of them subsequently, having used a condom on several occasions, contracted gonorrhœa twice, at intervals of two and eight months, after the condom had broken, though he used the gelo-tube immediately each time.

On the subject of soft chancre, Parneix is emphatic in condemnation of the present methods, which, he says, are harmful in favouring the action of the bacteria and in producing a false sense of security.

A. Gauducheau (1933), commenting on this article, said that the reduction in the incidence of syphilis had justified the use of the outfit, and he attributed the failure in the case of gonorrhœa to the fact that the men had not been instructed to urinate in gushes immediately after the act. He pointed out that the gonococcus quickly passes down the urethra out of reach of the contents of the gelo-tube, but he omitted to explain why gonorrhœa had occurred in 23 out of the 38 cases of gonorrhœa in spite of a prophylactic injection of argyrol. The experience may support the view of Kenneth Walker that the gonococcus may quickly gain access to the lymphatics, along which it travels backwards below the mucous membrane and therefore out of reach of any antiseptic.

PROPHYLACTIC CHEMOTHERAPY

General treatment before exposure to infection is applicable only to the prevention of syphilis. It is advocated by various workers, mainly for protection of prostitutes. During the late war F. Lesser in Warsaw gave the prostitutes under his supervision an injection of salvarsan once a month, with resulting decrease in the incidence of syphilis in the troops. Levaditi and colleagues have worked out in animals the protective action of injections of various metals, including bismuth, and Sonnenberg in the years 1925 to 1927 gave to each of 60 non-syphilitic prostitutes a weekly injection of bismuth for 18 months; only two showed any sign of infection, both of them in the early days of the preventive treatment. On the other hand, out of 50 prostitutes in similar circumstances but not treated with bismuth, 20 developed syphilis during the same period of 18 months. Sonnenberg had similar success with 100 prostitutes treated in the years 1927 to 1930. Krulle (1931), from whose article I have taken these particulars, has advocated the injection of bismuth into seamen as protection against syphilis when they go ashore.

Arsenical remedies have been used for a number of years as a preventive of syphilis after exposure to infection. Either a number of injections of one of the trivalent remedies, such as "606" or "914," have been given or more recently the pentavalent arsenical known in this country and France by the name of Stovarsol has been given by mouth, usually in doses of 0·25 g. first thing in the morning for four days in each of a few weeks. The statistics show that the method has apparently been successful in quite a large number of cases, but personally I never advise it because there is good evidence that such a method of prophylaxis can prevent the development of the primary sore but not the infection and so leave the patient in a fool's paradise. If a person who had been exposed to infection insisted on prophylactic treatment of this kind, I would recommend as many courses of treatment as for a patient with a primary sore but negative serum reactions. Since every person brought into contact with syphilitic secretion has a very good chance of escaping infection and the results of treatment of sero-negative primary syphilis are so good, it seems to me better to "wait and see" rather than to take a line of action which will always leave the patient in a state of uncertainty.

THE CARRIER

I come now to the method on which most countries are relying mainly for the prevention of venereal disease—namely, treatment of the carrier. It is a method of prevention which was first adopted by Denmark in 1778 and by Sweden in 1817. Other countries before and after those years provided hospital treatment of a sort for venereal disease but not so much with the idea of preventing the spread of disease as of getting the patients out of sight and

relieving their sufferings. A strong move in the direction of dealing properly with the problem of venereal disease was made by two conferences in Brussels, in 1899 and 1902, when resolutions were passed that students should be educated better in venereal diseases, that efforts should be made to increase the supply of specialists, that free treatment of the infected should be provided everywhere under conditions of secrecy and respect for the feelings of the patient, and that regulations prejudicial to the treatment of venereal diseases at hospitals should be removed.

Nothing very definite occurred after this until 1913 when a Royal Commission on Venereal Disease was appointed in this country, and immediately after the issue of its report in 1916 the Local Government Board (now incorporated in the Ministry of Health) started the Venereal Diseases Scheme of this country. The broad principle of this scheme is to stop the spread of venereal disease by bringing under treatment the greatest possible proportion of the infected in the community and keeping them under treatment until they are permanently non-infectious. For the purpose there are now in England and Wales 186 treatment centres; 87 laboratories for examination of specimens sent either by practitioners or by centres; 13 hostels for housing girls with venereal disease who are temporarily homeless and one home for cases of vulvo-vaginitis. There is also provision for education of the public in the dangers of venereal disease and the importance of seeking treatment early. The net in the form just outlined is probably gathering in most of the cases of syphilis and a fairly large proportion of the gonorrhœa in males, but is failing to catch an important proportion of females, especially those with gonorrhœa. Venereal disease in women is apt to be ignored, and efforts must be increased to detect it and persuade the patients to undergo treatment. Medical officers of maternity and child welfare centres are in a position to detect venereal disease in many cases; but then the difficulty is to persuade the patients to go to the centres. In a number of places this is being met by treating the patients where the diagnosis has been made, and it is hoped that, with a closer and closer liaison between maternity and child welfare and venereal disease officers, one important gap in the net will gradually be closed. So far the venereal disease scheme has not yet succeeded in bringing under treatment the infected woman who does not attend any public health centre and is quite ignorant of her infection. I calculate that for every woman under treatment for gonorrhœa in this or any other country there is at least one other not being treated at all, and until we can devise means of getting this section of the infected public under treatment there is little chance of our making much impression on the incidence of gonorrhœa.

The retention of patients under treatment is a vitally important part of the arrangements under the Venereal Diseases Scheme. Obviously it is useless from the point of view of preventing the spread of venereal disease, to bring the infected under treatment if they discontinue attendance before being rendered non-infectious. In this country there is no compulsion to attend, and successful retention has to depend on convincing the patients that the quality of the treatment is the best obtainable, on making the conditions of treatment as nice as possible, and on persuading the patients of the vital necessity, in their own interests, of continuing attendance until they are pronounced non-infectious. In a number of countries patients who cease attendance are compelled to return, and in this country there is a certain body of opinion in favour of compulsion, but on this question I fear I may say no more than that it is not one which can be decided easily. It does not follow that, if compulsion is successful in one country, it would be so in another inhabited by people of different habits of thought and behaviour. Evasion of compulsion laws is comparatively easy and the possibility of wholesale concealment of disease resulting from notification and compulsory treatment has to be considered because it would defeat our aim of bringing the greatest possible proportion of the infected under treatment.

RESULTS

The results of the Venereal Diseases Scheme in this country have been good in respect of syphilis, but here, as elsewhere, we cannot claim any success in reducing the incidence of gonorrhœa. The evidence as to syphilis is in the reduction in the number of cases dealt with for the first time at the centres. In 1932 in England and Wales this number, which includes both recent and old infections, was 17,493 as compared with 19,167 in 1925 and approximately twice that number in 1920. I am not able to give the figures for 1933 but have reason to believe that they will show a further decrease. I may say also that when recent infections only are counted the decrease is more marked than is shown in the figures I have quoted.

The death-rate of infants under one year of age certified as due to syphilis has fallen from 1·34 per 1000 live births in 1912 to 0·47 in 1932, the highest rate in the intervening years having been 2·03, in 1917. Other statistics pointing to a fall in the transmission of syphilis are contained in the report of the medical officer of health for Battersea, respecting the work of an antenatal centre in that borough. At this centre the blood of each patient has been tested for syphilis as a matter of routine for a number of years. In 1924 out of 517 patients 3·5 per cent. were positive. In 1932 out of 832 patients only 1·3 per cent. were positive.

The reason for the reduction in the incidence of syphilis is that by modern treatment the patient can be made non-infectious quickly. With gonorrhœa it is different because we have no specific remedy for it. But female patients with gonorrhœa can be made non-infectious and kept so by daily treatment, and in this I can see the only possibility of reducing the incidence of the disease. As I mentioned earlier, our problem is to increase the proportion of the infected women in the population who are brought under treatment. It would help materially towards its solution if every medical practitioner and every nurse were to lose no opportunity of impressing on patients the importance of having abnormal discharges examined bacteriologically.

You will probably have gathered from this lecture that the prevention of venereal disease is a problem of which there is no single solution, that some methods which may succeed in certain countries are likely to fail in others, but that one is applicable and essential everywhere and that is treatment of the carrier. To achieve this the requirements are not only liberal provision of facilities for diagnosis and treatment but education of the public so that they take the fullest possible advantage of those facilities. In this education the practitioner and the nurse could play a very valuable part.

L. W. HARRISON, D.S.O., M.B. Glasg., F.R.C.P. Edin.
Adviser in Venereal Disease, Ministry of Health; Director of Department for Venereal Diseases, St. Thomas's Hospital.

SPECIAL ARTICLES

MEDICINE AND THE LAW

Drunkenness as Defence to Charge of Arson

AT Leeds assizes last week, when a man was being tried for setting fire to the furniture in his house, a defence of drunkenness for once succeeded. He pleaded that he was so "mad drunk" at the time as not to know the nature of his act. He had, he said, ordinarily been a total abstainer, but domestic irritations had caused him to break out. Mr. Justice Finlay gave the jury a characteristically careful and accurate explanation of the law and the accused was acquitted.

Normally, as is well known, voluntary drunkenness is no defence. The drinker, in Coke's quaint phrase, is *voluntarius dæmon;* he has no privilege by the surrender of his self-control; "what ill soever he doeth, his drunkenness doth aggravate it." There are, however, two aspects of intoxication of which the law takes a less unsympathetic notice. First, though drunkenness (like anger) is not an excuse for crime, it may sometimes affect the degree of guilt where a particular intention is essential to the commission of the crime. Just as circumstances of provocation may reduce murder to the lesser offence of manslaughter, so drunkenness may be taken into account in considering whether the accused formed a particular intent. Secondly, drunkenness, if it produces insanity, may be a successful defence, as the recent Leeds case shows. Here it will not be enough to show that the man's mind was affected by drink so that he more readily gave way to some violent passion; this will not rebut the ordinary presumption that everyone intends the natural consequences of his acts. To be a successful defence the drunkenness must be of such a degree as to cause incapacity of forming an intention to commit the particular crime. The locus classicus for the law is the decision of the Court of Criminal Appeal in Beard's case in 1920. There the accused had criminally assaulted a 13-year-old girl; in furtherance of the rape he placed his hand on her mouth and his thumb on her windpipe, thereby suffocating her. He was held guilty of murder in the absence of evidence of such a state of drunkenness as would negative the intent to commit the rape. The doctrine of criminal responsibility in relation to alcohol, it may be added, would apply equally if for alcoholic intoxication there were substituted mental or bodily conditions due to narcotic or stimulant drugs or their hypodermic injection.

Aplastic Anæmia: Inquest on Cellulose Sprayer

An inquest was held at Battersea last week upon the death of Charles Ingold, a cellulose sprayer's mate, aged 19, who was found to have died of aplastic anæmia. His mother said he was brought home from work on the Thursday before Easter with a temperature of 103°; there were mauve patches under his skin. He was taken to the St. James Hospital, Balham, and his two brothers gave blood transfusions, but he died on Easter Sunday. Dr. W. L. MacCormac, medical officer at the hospital, explained the effects of the disease at the inquest. On admission the young man's blood was found to have turned almost to water. Two days before death specimens of his blood showed only 100 white blood-cells as compared with the normal 6000. Ingold's employers, for whom he had worked since November, were represented at the inquest. Allusion was made to a secret formula used in the spray for lacquer work. It was admitted that one element in the formula was harmful, but it was claimed that ventilation made it normally innocuous. The air in the factory, it was said, was changed 40 times an hour though the Home Office suggested a minimum of 30 times. The formula was shown to the coroner (Dr. Edwin Smith) and to Sir Bernard Spilsbury who gave evidence. The latter observed that this was a rare occupational disease, possibly due to benzine poisoning; the cause of the disease was not established. Dr. Donald Hunter, research worker in anæmia at the London Hospital, stated that this form of degeneratory anæmia was often due to benzine poisoning in other countries, but in the United Kingdom, where factories were excellently ventilated, no such case due to benzine poisoning had come within his own experience. According to Dr. Hunter the cause of 95 per cent. of the cases of aplastic anæmia was unknown.

The formula was not disclosed. Had the coroner been satisfied by the technical evidence that the public interest required the full analysis and examination of what was claimed to be a trade secret, he would no doubt have insisted on public disclosure. It was agreed that the cellulose spray contained benzine. The normal ingredients of the lacquer employed in the factory were stated to be the same as those used elsewhere in other English factories of the kind; it was the solvent which was the secret.

PARIS

(FROM OUR OWN CORRESPONDENT)

GOODWILL AS A SALEABLE ASSET

THOUGH French law does not in theory encourage the putting of a commercial value on the goodwill of a medical practice, holding that the confidence placed by a patient in his doctor is not an asset which can be priced in currency, there is a growing tendency for newcomers in a district to prefer the short-cut of a bought succession to the more laborious method known in the vernacular as squatting. The transaction between the incoming and outgoing possessor of a practice is often complicated by the transfer of a lease and medical and other fittings which are just as tangible as the goodwill of the patients is intangible and hypothetical. In a recent lawsuit, the purchaser of a practice disowned his signature to the deed of sale, pleading that he was free to cancel it as, according to the law, the confidence of the patients is no commercial commodity. While he lost his case, the situation with regard to the sale of a patient's goodwill is obscured rather than clarified; and the line separating the ethical from the unethical in this matter lacks definition. This is an additional reason for adhesion to a society whose technical advisers can pilot practitioners safely in these dangerous waters. The *Sou Médical* now has a membership exceeding 6000. There are five legal experts on its staff. The annual subscription is only 100 francs, and when an additional 50 francs are contributed as a subscription to the journal, *Le Concours Médical*, cover for half a million francs is provided in case of lawsuits. There are, of course, other concerns, not of a coöperative character, which

do business in the same field. But the policies which they issue are apt to be worded with such forensic finesse that doctors may find it much easier to pay their subscriptions than to reap any benefit from them.

A DROP IN THE GOLD STANDARD

A recent discussion at the Société Médicale des Hôpitaux made it clear that the treatment of tuberculosis with gold has reached the negative phase which is apt to occur with all new treatments. With few remedies has the positive phase been so marked. For several years past gold treatment has been so popular that you had only to cough a little to qualify for it. The attack on it on this occasion was led by Prof. Emile Sergent, who referred to cases of gold poisoning he had seen in hospital and private practice as a sequel to the indiscriminating enthusiasm of his colleagues. As for the successes associated with it, he was inclined to suspect that the inherent tendency of tuberculous changes to retrogress had been—more or less unconsciously—exploited in favour of this last newcomer in the therapeutic field.

GOITRE

The tenth session of the Assises Nationales de Médecine Générale Française was devoted to a discussion of recent collective research into the nature of goitre. In many parts of this country goitre would seem to be on the wane, an improvement commonly attributed to better hygiene and, above all, to a better water-supply. In one area the diminution of goitre was associated with the introduction of sea fish and more meat in the dietary. In another area the influence of heredity was found to be so great that it was demonstrable on the distaff side in about 40 per cent. of all the goitres. While endemic simple goitre, when found in the large towns, would usually seem to be imported and not to have developed in them, the hyperthyreoses appeared, on the whole, to be more common in the towns than in the country (a difference less marked since 1918), and among the rich rather than the poor. Contributory factors are acute articular rheumatism, the infections of adolescence, typhoid fever and other water-borne diseases of the intestinal tract. In some areas hyperthyreosis is construed as a sign of resistance to tuberculosis; when the thyroid signs diminish, there is apt to be a recrudescence of an old pulmonary tuberculosis. While the advocacy of complete and prolonged rest in the early treatment of Graves's disease found little or no contradiction, opinions diverged on the merits of radiotherapy and operative treatment. The results of radiotherapy in 658 cases collected by Dr. J. Belot from various sources in Paris were very encouraging: failures 5 per cent., improvement in 25 per cent., recovery or great improvement in 70 per cent. Dr. H. Welti maintained that the results of thyroidectomy were superior, and that the claims made by the radiologists were not substantiated by surgeons who saw patients whom the radiologists had failed to cure. During the past five years he had performed 289 operations on 207 cases of exophthalmic goitre, with only one operative death. He had also operated on 167 goitres showing no signs of hyperthyroidism, and among them he had only two deaths to record. Another speaker tried to restore the balance by remarking that the radiologist is now beginning to see the operative failures of the surgeon. This was an interesting debate.

NEW RADIOLOGICAL DEPARTMENT AT THE CANCER HOSPITAL

On Wednesday last H.M. the Queen opened the new buildings of the Cancer Hospital (Free) consisting of a private wing for paying patients, to be known as Granard House after the President of the Hospital, and of a new radiological department under the care of Prof. J. M. Woodburn Morison. The building also contains the new out-patient department which has long been badly needed. Our illustration shows the attractive frontage of the building on its corner site. The total cost of the new wing has been about £150,000.

BEDS FOR PRIVATE PATIENTS

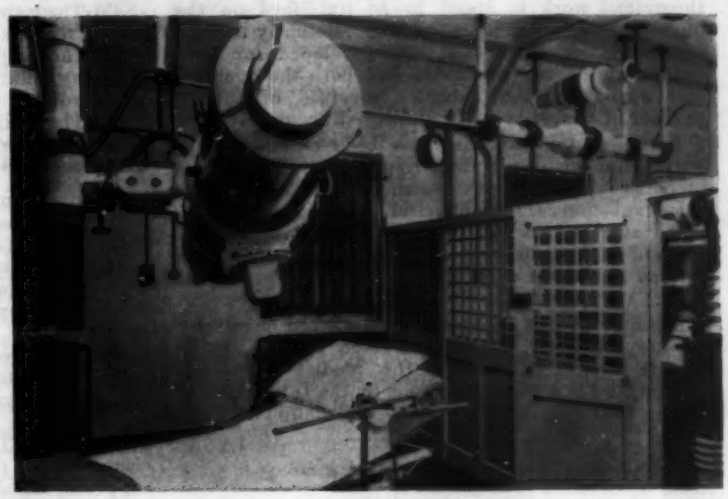
The first, second, and third floors of the building contain accommodation for 29 patients of limited means who can contribute towards the cost of their

Profile of Granard House.

maintenance and treatment. The scale of maintenance fees, which has been approved by the Charity Commissioners, is 6 guineas per week in a single room, 5 guineas in a two-bedded, and 4 guineas in a three-bedded room. For radiological investigation the maximum charge is 5 guineas for a complete gastro-intestinal examination (exclusive of enema) with 3 guineas extra for an opaque enema; 3 guineas for examination of the urinary tract, with an additional fee for intravenous and retrograde pyelography; 2 guineas for investigation of the heart and lungs, or 3 guineas if stereoscopic films are taken; 1 guinea for investigation of either upper or lower extremity, or 2 guineas for a stereoscopic film of the shoulder. Other charges are in proportion. There is also a schedule of maximum charges for pathological examinations; the highest is 2 guineas chargeable for sugar-tolerance determination, preparation of autogenous vaccines, estimation of basal metabolic rate or histology of a frozen section taken at operation.

RADIOLOGICAL DEPARTMENT

This has been designed to secure the closest possible coöperation between clinical work on the one hand and scientific investigation on the other. Under the direction of the late Dr. Robert Knox the work of the department was found to be increasingly cramped for space and Prof. Woodburn Morison will now have three complete floors (fourth to sixth in the profile) under his direction. These are allotted to (1) physical investigations and the teaching of students, (2) X ray diagnostic work and radium treatment, (3) high voltage X ray therapy, artificial sunlight, and electrical treatment.



Deep X ray therapy

In association with the University of London and the Royal Colleges provision is made for post-graduate instruction of medical students in both clinical and scientific aspects of radiology. For this purpose a new lecture theatre and experimental laboratories are provided. Facilities are also available for the instruction of radiographers. The diagnostic section comprises rooms devoted to X ray investigation both by screening and by radiography, as well as the requisite dark-rooms, consulting- and dressing-rooms. We give an illustration of the arrangement of one of these rooms devoted to diagnosis. The high voltage X ray apparatus on the fifth floor (also illustrated) has been specially designed for the production of penetrating X rays. Special attention has been given to the protection of patient and operator and to the measurement of dosage. There is a wireless device by which the patient can speak to the operator some distance away.

Part of an X ray screening room

PHYSICS DEPARTMENT

This department, which is in charge of Mr. W. V. Mayneord, D.Sc., has been mainly concerned with the problems of X ray and radium dosage. When work was commenced, the only method of X ray dosage was with a barium platinocyanide pastille and a standard parallel plate was set up and calibrated in German r units before this was adopted internationally. Problems of distribution were next attacked, measurements in a phantom being made at 130 KV. pulsating potential, the maximum then available. Quite recently these measurements, with vastly improved apparatus, have been carried up to 400 KV., and demonstrate the striking improvement in depth dose and output now available.

The work on radium therapy has two aspects, theoretical and experimental. The distribution of radiation around various containers has been studied mathematically and experimentally, affording in many cases a fairly accurate idea of radiation fields. This work led to the design of surface applicators which give uniform irradiation, as well as charts enabling the correct amounts of radium in applicators of various sizes and various distances to be read off. Meanwhile, work has been done on the establishment of the r unit in gamma ray therapy, work which is now fairly complete. This should help in the standardisation and rationalisation of gamma ray therapy. Work has also been done on the variation of electron emission and possible sensitivity variations of tissues with wave-length, and some

theoretical work is about to be published on the physical basis of biological action. Recently too the condenser dosimeter has been developed for both radium and X ray work, enabling both the quantity and quality of the radiation received in natural cavities of the body to be measured accurately.

Experimental work has also been carried out in conjunction with Prof. E. L. Kennaway on the optical properties of the carcinogenic hydrocarbons and allied substances. Biophysical problems are likely to be attacked in the future, now that means are available for measuring accurately and easily the various radiations used in clinical and experimental work.

Research in this department is financed chiefly by the hospital itself, but help is given by the British Empire Cancer Campaign, the Medical Research Council, and in certain directions by the International Cancer Research Foundation of Philadelphia.

"ACCREDITED MILK"

(FROM A CORRESPONDENT)

THE proposal of the Milk Marketing Board to add one more to the list of specially designated milks on the market will be received by the medical profession with rather mixed feelings. At the same time it is a highly important development and deserves detailed consideration, both on its merits and as an indicator of future developments in the long drawn out struggle for a clean safe milk-supply. It is a designated milk not sponsored by the Ministry of Health but introduced from the agricultural side, and those producers who comply with the requirements will be rewarded by receiving a bonus in the form of payment for their milk above the standard price given by the Milk Marketing Board, independent of their own exertions to sell the milk. The money will come out of the pool and is as such a contribution from all the milk producers. From this point of view it is wholly admirable, since the general effect must be to induce more and more producers to take the requisite steps to qualify for this additional payment and be placed on the roll of "Accredited Producers." Probably within a reasonably short time, a material proportion, even a majority, of the milk producers, will so qualify, and the whole standard of milk production will be raised and something which may fairly be called a clean milk-supply will be the general rule and not the exception. Put another way, those who do not conform to the new standard will be regarded as dis-credited milk producers, and it is not unreasonable to assume that as such their milk will be rejected for liquid consumption and they will have to be content with the much lower price payable for milk used for manufacturing purposes. Such no doubt is the laudable aim of the Milk Marketing Board, and their method of procedure is calculated to attain this object, using as it does the only practicable method to obtain a clean milk-supply, that of financial inducement.

But unfortunately, however, there is another side to the picture which induces considerable misgivings. To appreciate this aspect we have to consider the requirements necessary to be placed on the Roll of Accredited Producers. These are set out in the Report of the Reorganisation Commission for Milk (1933) and include :—

(*a*) The clinical inspection of herds and the elimination of diseased animals.

(*b*) The inspection of buildings to ensure compliance with a reasonable standard.

(*c*) The inspection of methods of producing and handling milk to secure compliance with a reasonable standard.

(*d*) The taking of, say, three surprise samples of milk over a period of three months and the satisfaction of a prescribed bacteriological standard.

Leaving out of consideration their indefinite nature and the considerable administrative problems involved, and assuming efficient control, it is obvious that at the best it is Grade A milk over again but with rather relaxed standards. And Grade A milk is fairly universally accepted as failing to give a safe milk-supply. It is well known that at least 40 per cent. of dairy cows are infected with tuberculosis, and it is notorious that clinical inspection will only eliminate a percentage of the infective animals, and a milk-supply free from tubercle bacilli cannot be guaranteed. The other three requirements refer to cleanliness of production. A cleanly produced milk-supply is highly desirable but merely a clean milk-supply is not a *safe* milk-supply. The risks of conveying to man tuberculosis, undulant fever, septic sore-throat, and the acute infectious diseases will be comparatively little reduced in the herds of accredited milk producers as compared with the ordinary producer. Stated briefly, the scheme of the Milk Marketing Board will materially assist in the production of a clean milk-supply but will do comparatively little to give a safe milk-supply, and it is a *safe* milk-supply which is insistently demanded by the medical profession.

The hope of the Milk Marketing Board that the new step will lead to an increased public confidence in the milk-supply with an added consumption is unlikely to be realised because an essential factor is lacking, the confidence and support of the medical profession. This can only be won by a *safe* as well as a *clean* milk-supply, and it is important to state this clearly. The proposal is one step in the right direction but not the only one and not even the essential step. In view of our infected herds and the impossibility of obtaining disease-free herds within a reasonable period, the only method available to give a safe milk-supply is efficient pasteurisation. A roll of accredited producers combined with pasteurisation of the milk supply would be a most valuable combination, but the Milk Marketing Board gives no sign that it appreciates this essential requirement. Without it the hope of a much larger consumption of liquid milk, which is so much needed both from the nutritional point of view and to help the milk producers, is likely to remain a hope unrealised. The medical profession wishes to help but it is unalterably opposed to anything short of a *safe* milk-supply.

One minor criticism may be mentioned. The name "accredited milk" is not a happy one. The expression "accredited" has become closely associated in U.S.A. and elsewhere, and is now being introduced into schemes in England and Scotland, for dairy herds which are accredited as free from tuberculosis. It is confusing to use the same term for milk supplied from herds which are not free from tuberculosis and which are not required to be so free. This expression "accredited" is firmly fixed in its usage for tuberculosis-free herds and should not be used with a quite different meaning. The nomenclature of designated milks is already confused and misleading and it is unfortunate that a fresh source of confusion is proposed to be introduced.

PUBLIC HEALTH

THE PRE-SCHOOL CHILD

A STUDY IN NUTRITION

So many of the measures adopted by health departments for safeguarding the health of children are founded either on general medical conceptions or the practice of other areas, that it is pleasing to notice an ad-hoc medical investigation leading up to concrete proposals. An enquiry into the physical condition of children between one and five years of age, in relation to their environment and social circumstances, has been conducted for Newcastle City Council by Dr. J. C. Spence, and it forms the text of a report [1] by the medical officer of health, Dr. J. A. Charles, on the social and administrative shortcomings which conduce to the state of affairs revealed. Three groups of poorer class children, totalling 125, and belonging in 113 instances to families where the breadwinner was unemployed, were submitted to careful medical scrutiny, their medical histories studied, and their home conditions investigated. The families chosen were regarded as fair samples of the class patronising clinics and similar social institutions. At the present time these inevitably include a large proportion of unemployed. As controls 124 children of the professional or well-to-do commercial class were examined by Dr. Spence. The numbers are admittedly small, but thorough clinical examination of the children by one examiner, or under his direction, was thought to be more reliable than an analysis of more numerous records compiled by a number of independent clinicians, and the time available placed a restriction upon the number of observations. In the first instance the children were classified from inspection under broad descriptions of the usual kind—good and satisfactory general condition, poor and unsatisfactory general condition and remainder. Inevitably this grouping was found to be deceptive in many instances in the light of more thorough clinical examination. This examination was directed specially to the following points—viz., height and weight, past or present rickets, anæmia, deficiency diseases and past illnesses.

Charts illustrating the distribution of heights and weights of the "professional families" class and the "labouring and artisan families" class are illuminating. Dr. Spence has adopted zones of heights and weights for each age as representing the normal ranges, and rightly describes these as constituting a modest standard. Stated briefly in figures, the charts show that 25 per cent. of the professional class children were above and only 5 per cent. below the standard heights, while less than 2 per cent. of the poorer class were above them and 47 per cent. below. As to weights, 48 per cent. of the better class children were above standard and 13 below, as against corresponding percentages of 11 and 55 among the poor. In the search for signs of rickets, Dr. Spence's past work [2] has convinced him that X ray examination is essential, and 103 children were so examined after suspicion had been aroused by clinical tests. In only 5 cases was there evidence of active disease. In the pursuit of anæmia, hæmoglobin values over 75 per cent. were accepted as satisfactory and under 65 per cent. as definite evidence of the disease. Among 25 of the better class children, taken as controls, 21 gave hæmoglobin readings above 75 per cent. and none below 70 per cent. On the other hand, of 121 of the poorer children, only 24, or 20 per cent., had hæmoglobin values over 75 per cent., and 28, or 23 per cent., were definitely anæmic. There was a notable absence of other signs of deficiency disease. Enquiry into the history of illnesses revealed a significant difference between good and poor class children. Of the former, only 5 out of 124 had suffered from pneumonia or pleurisy or chronic or recurrent cough, compared with 49 of the 125 poor children. Bringing together all his observations, Dr. Spence found that out of 125 poor children 45 (36 per cent.) were unhealthy or unfit and in 20 of these cases he considered that preceding illness was the starting-point of the unfitness; in the other 25 he could find no cause but improper or inadequate diet. As regards housing, he found that 27 poor children whom he was able to accept as healthy were living in houses with an average occupancy of 1·7 persons per room, while the 45 unhealthy were in more congested homes with an average of 2·6 persons per room. His conclusions are that the physical unfitness, giving rise to an appearance of malnutrition among 36 per cent. of poor children, is preventable, since the condition is much less frequent among the well-to-do; that the main immediate cause is physical damage by infective disease; and that the main factors which promote and perpetuate it are overcrowding in houses and insufficient diet. The relative importance of housing and dietary he suggests as a subject for a much larger enquiry, and it is clear from recent medical and political controversies that there is need for definite knowledge on such matters.

In commenting on the findings of Dr. Spence, Dr. Charles points to the heavier and earlier incidence of measles and its consequent influence upon mortality and chronic catarrhal disease in the more congested areas of the city. He shows that the results of this minute enquiry are in correspondence with the general findings among school entrants. In Newcastle it has been found that, among a small recent sample of the unemployed, the weekly expenditure on food averaged 4*s.* 5·8*d.* per man value, and at the prices reigning at that time a minimum adequate dietary would have cost 5*s.* 7½*d.* on the B.M.A. Committee's standard, or 5*s.* 1½*d.* on that of the Committee on Nutrition of the Ministry of Health. Consequently, he urges again the need for a forward policy in housing, increased hospital provision for measles and whooping-cough, more liberality in the assistance of the unemployed, and wider application of those measures for the care of "toddlers" which maternity and child welfare and education committees are permitted to take.

[1] Investigation into the Health and Nutrition of certain of the Children of Newcastle-upon-Tyne between the Ages of One and Five Years. By J. C. Spence, M.D., F.R.C.P., with observations by J. A. Charles, M.D., M.R.C.P., D.P.H.

[2] THE LANCET, 1933, ii., 911.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 28TH, 1934

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 9 (last week 3); scarlet fever, 2742; diphtheria, 1122; enteric fever, 31; acute pneumonia (primary or influenzal), 1163; puerperal fever, 36; puerperal pyrexia, 114; cerebro-spinal fever, 36; acute poliomyelitis, 6; acute polio-encephalitis, 1; encephalitis lethargica, 15; dysentery, 32; ophthalmia neonatorum, 100. No case of cholera, plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 7th–8th was as follows: Small-pox, 8 under treatment, 0 under observation (last week 11 and 0 respectively); scarlet fever, 1598; diphtheria, 1657; measles, 2857 (last week 3171); whooping-cough, 303; puerperal fever, 38 mothers (plus 14 babies); encephalitis lethargica, 258; poliomyelitis, 2; "other diseases," 145. At St. Margaret's Hospital there were 15 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox or enteric fever, 103 (46) from measles, 6 (1) from scarlet fever, 36 (6) from whooping-cough, 53 (12) from diphtheria, 49 (13) from diarrhœa and enteritis under two years, and 81 (17) from influenza. The figures in parentheses are those for London itself.

Measles is still diminishing, although this week there were 10 fatal cases in Liverpool and 6 in Newcastle-on-Tyne. Whooping-cough also caused 10 deaths in Liverpool and 5 in Birmingham. Fatal cases of influenza were chiefly confined to the northern and midland areas: Manchester reported 6 deaths, Leeds and Liverpool each 4; Birmingham reported 9 deaths and Newcastle-under-Lyme 3. Six fatal cases of diphtheria occurred at Manchester. Five fatal cases of diphtheria occurred at Liverpool, no more than 2 elsewhere.

The number of stillbirths notified during the week was 282 (corresponding to a rate of 41 per 1000 total births), including 47 in London.

PANEL AND CONTRACT PRACTICE

An Apology for Rules and Regulations

In an interesting essay on health insurance in England, contributed by Sir Henry Brackenbury to a New England journal (New Eng. Jour. Med., April 19th, p. 851), is a frank admission of disquieting features in the scheme. The drawback most commonly mentioned is the multiplicity of rules and regulations about medical benefit. No doubt, Sir Henry says, there is a tendency to multiply and complicate these unnecessarily, but he assures his readers that most of them "arise from three extremely valuable, and probably unique, features embodied in the English system." These are:—

(1) Every registered medical practitioner has the *right* to be a member of the service unless and until it is proved that, because of misconduct, his continuance therein is detrimental to the service as a whole;

(2) The close approximation of the conditions of the service as between doctor and patient to those which obtain in private practice;

(3) The considerable share assigned to the profession itself in administration.

It is because of, not in spite of, the confidence in the profession which these features disclose, Sir Henry Brackenbury writes, that provision has to be made for the occasional delinquent. If the state has no right to choose which physician shall take part in the service, machinery has to be established for dealing with anyone who conspicuously fails in his duty. If the state has limited its function to bringing together doctor and patient, leaving them free thereafter to act in accordance with recognised or traditional methods, it must provide means whereby, in case of dispute, each may have a square deal. If the state leaves purely medical matters to be judged by a purely professional body, there must be some authoritative delimitation of the respective spheres and some prescribed means for action. All these statutory requirements, rules, and regulations, need not, he concludes, trouble the physician any more than the ordinary requirements of the penal code trouble the law-abiding citizen. In fact, they do not worry him overmuch; they exist largely for his own protection. There is, however, a certain type of mind which tends to be distracted by them, and therefore they should be made as simple and few as possible.

Contract Fees for Specialists

A report upon hospital and nursing-home schemes, issued by the executive committee of the National Association of Local Government Officers, suggests that specialist surgeons and physicians should reduce their fees to members of the Association. The committee was asked to devise some scheme to help such of their members and dependants as are at present outside the existing hospital aid societies. The only self-supporting scheme on an insurance basis likely to meet their needs is discovered in the Hospital Provident Association (associated with the Manchester and Salford Medical Charities Fund) under which free service—in voluntary hospitals, public health hospitals, or private nursing-homes—is offered to members with an income up to £600 per year, and grants in aid are made to those above this limit. The liability of the H.P.A. is limited to 40 guineas in any one year, no assistance being given for home medical treatment, or in cases of tuberculosis, maternity, mental, and certain infectious diseases. It is stated that this Association—

"has made arrangements with a large number of hospitals . . . whereby up to a certain number of beds, cases for the Hospital Provident Association could be admitted at an agreed rate of 10 guineas a week, 5 guineas of which was for the hospital charges and the other 5 guineas placed in a hospital suspense account of the hospital out of which fees for surgeons, anæsthetics, &c. were paid. By this method patients could obtain their treatment more cheaply than if they went into a hospital where they paid probably a less amount for the residence and a greater amount for the operation. In other words, in a hospital under agreement with the Hospital Provident Association a person could have treatment and an operation of almost any magnitude or cost at the 'all-in' charge of 10 guineas a week."

It seems that under this scheme patients who could afford reasonable specialist fees—as they should be able to do if their income is approaching £600 a year—are getting specialist services at an improperly low rate. Operations are matters often of life and death; they should be considered to be capital charges and not such as have to be met out of an annual income. If a patient buys a house he does not say "I cannot pay £900 for it as my income is under £500 per year." It is a question whether the specialists on the staff of these hospitals "in the north-western districts" should not protest against the exploitation of their services by boards of management. Specialists and others give their services to hospitals to treat the poor of the community who cannot pay their ordinary fees. There is no reason why those who can afford to pay specialist fees should not cover their liability by some form of insurance, but that is a different thing from asking a specialist to share 15 guineas with an anæsthetist for an operation requiring three weeks stay in hospital.

MEDICAL EXHIBITION CENTRE.—The third floor and the basement of British Industries House, near Marble Arch, are to be devoted to a medical exhibition centre which will be run under the guidance of an advisory committee whose chairman is Dr. Alfred Cox (see THE LANCET, Feb. 10th, p. 310). The centre will be officially opened on July 18th.

CORRESPONDENCE

TESTS FOR MOTOR DRIVERS

To the Editor of THE LANCET

SIR,—In answer to Dr. Howard Mummery I would point out (as I stated in my letter to the *Times*, April 23rd) that the National Institute of Industrial Psychology has in fact evolved a shorter series of tests than that described by your representative. I have had an interview with the director subsequent to my letter and have his authority for making some further statements. The psycho-physical test should come first, as by that test it may be demonstrated that the applicant is totally unfit to drive, in which event the training should be no longer continued. This would save persons who are obviously unfit from being put to the expense and trouble of a quite useless training. The part of the programme at present in operation at the institute which it would be desirable or necessary to keep might be summed up under the following headings: (1) vision, (2) reaction time, (3) judgment of speeds, (4) judgment of distances, (5) resistance to distraction, (6) vigilance.

The technique of applying these tests could be learned by a man of average intelligence, with driving experience, within a fortnight, and the institute would undertake to select and train such persons. The cost of training of these prospective administrators of these psychophysical tests would be about £3 3*s*. for each, and the provision of apparatus for each centre roughly £60. Candidates might be tested in groups of six or even more, and the duration of the test might be shortened to 30 minutes. If the fee paid to each teacher for the tests were, say, £2 2*s*. an hour, the cost to the individual candidate would be quite small, well within the fee of 10*s*. now suggested in the Road Traffic Bill.

It will be noted that examinations of general medical fitness are not in the category of tests. It is obvious that no layman could be entrusted with a medical examination, but it is probable that the tests as described would reveal any gross disability, and attention would be thus directed to the necessity of a professional medical examination. To require a medical examination in all cases would entail so heavy an expense and so often be unnecessary that it would clearly be an impractical policy to press its enforcement upon all candidates to drive.

It will also be noted that the test of "confidence and general road behaviour in driving a model car through moving scenery," cited in my letter to the *Times*, has been omitted. The experience of nausea felt by your representative and by Dr. Mummery throws some doubt upon the value of this particular test, and a trial upon the road itself would probably meet with more support from public opinion. It happens also that the apparatus used at the institute in the performance of this test is the only really expensive item. I have consequently omitted this in the motion I have tabled (a copy of which I enclose herewith) for considering this subject in Committee, and I propose that the psycho-physical tests as mentioned above shall be used in combination with a test upon the road itself of confidence and general road sense.

In conclusion, may I express my warm thanks for the support which you give to my plea to "enlist the help of the industrial psychologist in planning tests suitable for mass application."

I am, Sir, yours faithfully,

House of Commons, May 7th. E. GRAHAM-LITTLE.

THE SCOPE OF PSYCHOTHERAPY

To the Editor of THE LANCET

SIR,—As director of the Institute of Medical Psychology I am grateful for your annotation under this heading last week. Not only the physicians of this institute but all other psychotherapists of experience will agree with your two special points of emphasis. It is certain that the early treatment of "nervous" disorders must involve child psychiatry (a name that really is preferable to child guidance). It is equally true that increasing experience should lead us to better diagnosis so that the lengthy and costly methods of analytic treatment shall only be employed for those who are likely to respond adequately. We, here, have for long been attempting to achieve this state of affairs, and certainly we have always recognised "that a flair for the sympathetic handling of patients is not always combined in one and the same person with the ability and the experience that are necessary for competent diagnosis." Every patient who is sent by his doctor to the institute has two interviews, of approximately an hour each, for the purpose of diagnosis, one of which is purely physical and the other from the psychiatric angle. These interviews are carried out only by the senior and most experienced members of the staff. As a matter of fact approximately one in four of the patients referred here as suitable is turned down by the examining physicians.

It is more than doubtful, however, whether any clinician, in whatever branch of medicine his interests may lie, would agree with your suggestion that, in order to limit a waiting-list, only those patients who were capable of complete "cure" should be treated, and those with conditions capable of alleviation be excluded. You selected your figures from the institute's last report to back your argument. Might it not have been more relevant to say that though the physicians' estimates of improvement on discharge were conservative, in that particular group of ex-patients, after three years 31·1 per cent. reported themselves cured, while a further 30·3 per cent. reported improvement (*more than slight*) maintained? Including this particular group of cases, the results of the follow-up of all ex-patients (averaged) shows that 33·5 per cent. are "cured" and the total of "cured" and "improvement maintained" together is 69 per cent. The proportion of patients who are not helped or who relapse is 16·5 per cent. This list does not compare unfavourably with figures of the other branches of medicine, and surely speaks quite well for the diagnostic skill that is shown in selection of patients.

The staff of this institute certainly welcome your criticism and your suggestion, but, from the point of view of those who are seriously concerned with the scope of psychotherapy, I think these further figures should be mentioned.

I am, Sir, yours faithfully,

May 7th. J. R. REES.

THE REGISTRATION OF OSTEOPATHS

To the Editor of THE LANCET

SIR,—Sir Ernest Graham-Little has reminded us that the Osteopaths' Registration Bill is now before Parliament, and I think that medical men at least should be acquainted with the truth about this movement.

In the first place, osteopathy has nothing whatever

to do with "bone setting" or with manipulative surgery or the therapeutic manipulation of stiff joints. Manipulative surgery is now a recognised branch of orthodox surgical practice based upon sound pathological principles. Osteopathy was started little more than 50 years ago by a certain Dr. A. T. Still of Chicago, who enunciated the principle that "the law of the artery is supreme," and taught that practically all diseases are due to pressure upon the blood-vessels in the intervertebral foramina, brought about by (imaginary) displacements or "lesions" of the vertebræ. About 20 years later a man named Palmer, of Davenport, Iowa, announced that he had made the "discovery" that 95 per cent. of all diseases are due to pressure upon the nerves in the intervertebral foramina, brought about by the same (imaginary) displacements of the vertebræ. He enunciated the principle that "the law of the nerve is supreme," and he founded a school of chiropractic in opposition to the school of osteopathy previously founded by Still. The essence of both these doctrines is the treatment of *remote* diseases by the manipulation or "adjustment" of the imaginary spinal lesions which are supposed to be their cause.

These rival factions (to mention only two) have flourished exceedingly in the United States of America. But they have almost exhausted the field of credulity in that country, and they are now making the most strenuous efforts to secure a status which would enable them the better to exploit the resources of this country. It should be clearly understood that this is an American stunt; the British element in osteopathy is practically negligible. A few osteopaths have taken medical degrees, which means that they have had some sort of education, and it is remarkable that these men have at once discarded the cardinal doctrines of osteopathy and chiropractic, because they are obviously impossible. They have however substituted yet another doctrine, namely "congestion," due to the same imaginary displacements of the spine. This doctrine, of course, is equally fallacious but rather more subtle, because more difficult to disprove.

Enough has been said to show that these factions are not agreed among themselves as to which particular lie shall be put across the public as a cloak for empirical manipulation of the spine, and it will be interesting to see whether our enlightened legislators decide to give their official blessing to "the law of the artery" or to "the law of the nerve" or to all and sundry of these quack manipulators. It has been naïvely suggested that osteopaths do not require the full training of the medical curriculum to fit them for the practice of their art. One answer to this is that the last issue of an osteopathic journal that came into my hands was concerned entirely with the treatment of cancer of the uterus.

I am, Sir, yours faithfully,

London, W., May 7th. A. S. BLUNDELL BANKART.

To the Editor of THE LANCET

SIR,—Opposition from Sir E. Graham-Little, M.P., to the recognition and legal regulation of osteopathy has been so persistent that it does not surprise me to learn that he has put down a motion for the rejection of the Bill which Mr. Robert Boothby introduced into the House of Commons. It is surprising, however, that Sir E. Graham-Little should continue to use against the Bill arguments which have been more than once refuted. May I, as an osteopath, state the position as we see it?

As the law stands, any person can offer to diagnose and treat disease. There is nothing to prevent an unqualified person setting up in practice as a healer, provided that he does not use any title or description which suggests that he is a registered medical man possessing certain academic degrees which in fact he does not possess. I am, as an osteopath, as much opposed as Sir E. Graham-Little is, to exploitation of the public by unqualified practitioners, and I have taken an active part in promoting the Bill now before Parliament, with the object of prohibiting the practice of osteopathy by persons who are not in possession of the registrable qualifications prescribed and defined in the Bill. Apparently he does not yet realise that his opposition to the Bill is calculated to leave unremedied the scandal of unqualified practice. The organised osteopaths in this country are trying to close the door against the unqualified practitioner in their field of work. He is content to leave it open, not only as far as osteopathy is concerned, but generally as regards the healing arts.

I seriously doubt whether his attitude commands the assent of the medical profession as a whole. Even if it does, I am not without hope that Parliament will deal sympathetically with a Bill which simply lays down the principle that osteopathy shall be practised in this country by qualified persons and not by those who are unqualified.

Sir E. Graham-Little's letter leads to his now familiar conclusion that all the trouble between registered and non-registered categories of medical practice can be settled by the simple expedient of compelling everybody to qualify as medical men and allowing those who wish to specialise—in manipulative therapeutics, for instance—to do so by post-graduate study. This is no remedy at all for the scandal of unqualified practice, unless he proposes also to prohibit practice by non-registered persons. Does he propose this? I have not yet elicited a plain answer to this question—but it cuts, I submit, at the root of Sir E. Graham-Little's objection to our Bill.

I am, Sir, yours faithfully,

WILFRID A. STREETER,
Hon. Director, Osteopathic Defence League.

London, W., May 7th.

*** That treatment ought to be rendered only by those who are, through training and examination, found to be fitted all will agree, but it does not follow as the hon. director of the Osteopathic Defence League presumes that medical men desire professional recognition for osteopaths. Osteopathy, as Mr. Bankart points out, is not manipulative surgery, but a system of therapeutics; and treatment given under this system has no scientific foundation.—ED. L.

THE DOSAGE OF ŒSTRIN

To the Editor of THE LANCET

SIR,—Recent work on substitution therapy by œstrin in castrated animals shows that enormous doses of 500,000 to 1,000,000 international units are required to replace completely the œstrogenic function of the ovary in a castrated woman. Prof. Dodds, in his Goulstonian lecture, published in your last issue, considers that smaller doses are and must be valueless in clinical medicine, and claims the support of most gynæcologists for this view. Many women, however, suffer from slight degrees of ovarian deficiency, and quite small doses of œstrin may well be effective in them, which would be valueless in a castrated baboon. I. F. Stein and M. L. Leventhal (Jour. Amer. Med. Assoc., 1932, xcviii., 621) record that out of ten women treated for amenorrhœa by the injection of 100 mouse units of œstrin, five became

pregnant. Dr. Gardiner-Hill has reported (see THE LANCET, 1932, i., 188) on two patients with amenorrhœa and sterility who were given an injection of 180 and 200 mouse units respectively; both menstruated and both became pregnant.

In this connexion the following brief record of three cases in which pregnancy followed the oral administration of Progynon, a follicular hormone, may be of interest.

CASE 1.—Healthy woman, aged 27. Married for four and a half years; contraceptives never used. Consulted me for sterility in 1930. She gave a history of scanty menstruation, of short duration, and with a five weeks' interval ever since adolescence. Sexually cool. Pelvic organs normal. The only treatment given was one progynon dragée of 250 mouse units daily. After one month's treatment the period was only two days over the normal four weeks. After two months' treatment the interval was four weeks exactly. After three months' treatment pregnancy occurred. Parturition had to be induced owing to delay, and a Cæsarean section became necessary owing to some obscure abnormality of the muscular contractions of the uterus, and acute dilatation of the stomach subsequently occurred. The Aschheim-Zondek reaction was negative at four months.

CASE 2.—Married woman, aged 28, with one child aged 7. No contraceptives used for two and a half years. Desired a second child. This woman gave no history suggesting any ovarian deficiency, normal sexually, and the periods regular and normal. She was given one dragée of progynon of 150 mouse units daily for 16 days, after which pregnancy resulted and terminated normally.

CASE 3.—Healthy woman, aged 36. Married nine years. No contraceptives used for three years. Consulted me for sterility. She gave a history of periods of short duration and slight loss, though regular in time, since adolescence. Sexually frigid. Treatment: one dragée of progynon of 150 mouse units daily for two months. During the third month two dragées were given daily. Pregnancy occurred at the end of the third month of treatment, and is proceeding normally. The Aschheim-Zondek reaction was reported as a "weak positive" at four and a half months. The œstrin content was within normal limits.

It is difficult to believe that the occurrence of pregnancy in these cases was either a coincidence only or the result of suggestion. Dr. Gardiner-Hill has suggested that such clinical results as these might be explainable on the "trigger" hypothesis of W. Shaw—a small dose stimulating a subfunctioning follicular apparatus to produce active follicles and so initiating the cycle which ultimately results in normal menstruation and pregnancy.

There is some evidence that a slight degree of anterior pituitary hypofunction also existed in two of my cases. I have treated one case of sterility on the above lines without success.

I am, Sir, yours faithfully,

Bridlington, May 5th. P. D. H. CHAPMAN.

BLOOD TRANSFUSION IN GASTRIC HÆMORRHAGE

To the Editor of THE LANCET

SIR,—Referring to Dr. Aitken's article in your issue of April 21st, I wondered if your readers would be interested in the blood-pressure findings in a series of cases investigated along lines similar though not so exhaustive as his. In 10 cases of hæmorrhage (5 of gastric or duodenal ulcer, 3 of pernicious anæmia, 1 of carcinonia of the stomach, and 1 of reactionary hæmorrhage) I took the systolic and diastolic blood pressure before, during, and ½, 1, 2, and 4 hours after transfusion. The transfusions were given by the Joubet syringe in 5 cases and with a Rotunda syringe using citrated blood in the remainder. The object of the investigation was to test the theory that a blood transfusion increases blood pressure, thus predisposing to further hæmorrhage. Far from this being the case, the effect noted in all these cases was a slight lowering of the systolic pressure during the transfusion and subsequently a pressure not significantly different from the initial readings except in one case where there was a drop from 150 to 120 mm. Hg.

In all 10 cases the transfusion was called for as an emergency method of treatment and 7 of the patients recovered and went home. Of the 3 who died, 1 had gastric ulcer, 1 pernicious anæmia, and 1 aplastic anæmia. The patient with carcinoma did not die until some time later. The series was a small one, but taken in conjunction with subsequent cases in which blood transfusion was not followed by further hæmorrhage, it suggests that the hypothesis that blood transfusion raises the blood pressure requires further inquiry.—I am, Sir, yours faithfully,

Radcliffe-on-Trent, Notts, May 2nd. H. A. PALMER.

PSYCHOLOGICAL MEDICINE AT THE NEW POST-GRADUATE SCHOOL

To the Editor of THE LANCET

SIR,—May I be allowed to reply briefly to Dr. Yellowlees's helpful letter in your last number, though I certainly cannot suggest, still less announce, any formal expression of policy on the part of the new school?

No courses have yet been arranged—indeed, Friday, May 4th, was the last date for applications for the four professorships. It is clear that, until these chief appointments have been made, no final decisions as to the remainder of the staff, or as to the character and duration of the courses to be provided, can be made.

Dr. Yellowlees may, I think, rest assured that the school, in appointing its teaching staff and in arranging for courses, will have before its notice the claims of psychological medicine and other subjects mentioned in the Athlone Report of 1921. Let me add that the school would welcome any suggestions, or indications of the desires of medical practitioners as to the courses to be provided.—I am, Sir, yours faithfully,

M. H. MACKEITH, D.M., M.R.C.P.,
Dean of the British Post-Graduate Medical School.

London, May 8th.

AN EARLY CASE OF X RAY DERMATITIS

To the Editor of THE LANCET

SIR,—About 1893 my brother, the late Dr. R. S. Nichol, of Manchester, was the victim in a revolver accident and received a bullet which lodged between the liver and the lung. The surgeons of that period had little or no experience of gunshot wounds, so it was wisely decided that, provided no bad results ensued, it would not be advisable to probe or essay an extraction of the bullet. The weapon was somewhat less than 0·320 in calibre and fired a lead bullet. Had it been a modern automatic with a nickel jacketed bullet and a powerful charge it is probable that the missile would have gone clean through the body without parking itself for future observation.

In 1895 came the news of the discovery of X rays and experiments were being carried out everywhere. By this time my brother was a medical student at the Victoria University, and hearing of the investigations then being made in the physics department, under the direction of Prof. Arthur Schuster, offered himself as a subject. Between 2 and 5 P.M. one afternoon he lay on a photographic plate, under a Crookes' tube, and took the prolonged and unbroken exposure. Unfortunately, good technique had not then been attained, and I think the attempt must

have been futile as I do not remember hearing of any satisfactory photographic result. There was however a sequel to this exposure, for about ten days afterwards my brother showed me his chest and asked my opinion. I noticed a round discoloured patch about 8 inches in diameter, with the bullet wound as centre, very similar to a sunburn, or what we now see after an overdose of ultra-violet rays. The only conclusion I could come to was that the condition was directly due to the action of the X rays, and I urged my brother to make the discovery known. This he never did, and it was not until some time later that a similar phenomenon was observed and recorded. Perhaps one of your readers can tell me the first recorded case of X ray dermatitis.

My brother died in the Manchester Royal Infirmary in 1927, having never suffered any ill-effects from the embedded bullet.—I am, Sir, yours faithfully,

J. O. NICHOL, B.Sc., A.M.I.E.E.

Manchester, May 3rd.

A DISCLAIMER

To the Editor of THE LANCET

SIR,—In view of the publicity given in the press to my informal talk to the Ladies' Association of Queen Charlotte's Hospital, I should like to make it clear that I did not know that reporters were to be present, nor did I know that the proceedings were to be published.—I am, Sir, yours faithfully,

Harley-street, W., May 7th. LOUIS CARNAC RIVETT.

THE SELENIDE TREATMENT OF CANCER

Dr. A. T. TODD writes to point out that the annotation on p. 963 of our last issue gives too pessimistic an account of his results in the treatment of cancer. In particular the statement that ten of the patients described as apparent cures are alive "more than a year after the beginning of treatment" requires revision. The duration of the "apparent cures" is calculated, he informs us, from the *end* of treatment (which lasts at least a year) to the month of October, 1933, when his paper was compiled. At least 19 months, therefore, has now to be added to the duration of these "apparent cures" in order to obtain the period of survival as ordinarily reckoned; and on this it is seen that 7 out of 15 are alive and free from symptoms three years or more after their treatment began, while the other 8 have all survived more than two years. Publication of the figures has been delayed, Dr. Todd says, until it was likely that the results were reasonably permanent. He adds in conclusion: "Though I only accept what are called scrap-heap cases, there is no reason why the method should not be applied to current surgical practice. If my results in my cases are what is given, what is likely to follow the application of the method to cases after presumed complete operation?"

VACCINATION: THE MODERN VIEW

A LETTER from Colonel W. G. King, I.M.S. retd., and Major Myer Coplans, late R.A.M.C. (T.A.), reaches us commenting on the opening speech made by Dr. S. Monckton Copeman at the recent discussion under this heading which took place on Feb. 23rd in the section of epidemiology of the Royal Society of Medicine. The writers criticise Dr. Copeman for claiming to have introduced glycerinated lymph, but allow that his reference may have been due to the belated action of the British Government in issuing such lymph from an officially recognised institution. They consider that accuracy requires detailed mention of previous work in similar directions, and give detailed references in support, while they recognise that our report of Dr. Copeman's words was necessarily only a brief résumé.

Those who are historically minded may refer to a leading article in THE LANCET of April 28th, 1900 (p. 1216).

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. to be Surg. Capts.: G. R. McCowen, H. F. Briggs, C. F. O. Sankey, and F. J. D. Twigg.

F. H. Ward, E. J. Littledale, M. A. Rugg-Gunn, and S. H. Rhys Price to be Surg. Lts.

The following appointments are notified: Surg. Comdrs. G. B. Cockrem to *Effingham* and J. Kirker to *Victory*, for R.N.B.

Surg. Lt. Comdrs. E. C. Davis to *President* for course, and F. R. P. Williams to *Victory* for R.N.B.

Surg. Lt. J. G. V. Smith to *Pembroke* for R.N. Hospital, Chatham.

ARMY MEDICAL SERVICES

Col. W. D. C. Kelly, late R.A.M.C., retires on retd. pay.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. E. W. M. Paine, having attained the age for retirement, is placed on retd. pay.

Maj. C. L. Franklin to be Lt.-Col.

Maj. & Bt. Lt.-Col. C. H. H. Harold and Maj. D. W. Pailthorpe retire on retd. pay.

The undermentioned Lts. to be Capts. (Provl.): A. Macdonald and W. R. M. Drew.

Capt. J. C. Collins to be Maj.

TERRITORIAL ARMY

Lt. R. B. Brew to be Capt.

Lt. H. Rogers resigns his commn. and retains his rank.

Lt. W. F. Dorward resigns his commn.

E. H. Jaques (late Cadet, Durham Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

Supernumerary for service with O.T.C.—2nd Lt. R. W. Rattray to be Lt. supern. for serv. with Med. unit, Edinburgh Univ. Contgt., Sen. Div., O.T.C.

INDIAN MEDICAL SERVICE

Majs. M. L. Treston, A. Chand, R. Lee, T. S. Shastry, C. de C. Martin, J. H. Smith, J. B. de W. Molony, K. R. Batra, B. H. Singh, O. R. Unger, A. H. Harty, N. Briggs, F. R. Thornton, R. L. Vance, F. Griffith, and J. P. Huban to be Lt. Cols.

Temp. Lts. T. R. Pahwa, M. A. Gaffar, and J. N. Vasudeva to be Temp. Capts.

The undermentioned Lts. (on prob.) are rest. to the estabt.: W. M. E. Anderson and J. W. D. Goodall.

P. I. Franks, H. B. Wright, J. M. Davidson, D. P. Dewe, M. G. Leane, and G. E. S. Stewart to be Lts. (on prob.).

Lt.-Col. S. J. Bhathena retires.

ROYAL AIR FORCE

Flight Lt. (Hon. Squadron Leader) G. S. Ware relinquishes his temporary commission on completion of service and is permitted to retain the honorary rank of Squadron Leader.

Flight Lt. (Hon. Squadron Leader) J. G. Skeet relinquishes his temporary commission on completion of service.

COLONIAL MEDICAL SERVICE

The following appointments have been made: Dr. H. C. Armstrong, Dr. J. W. Denoon, Dr. F. J. Sladen, and Dr. G. Watt, Medical Officers to the Gold Coast, and Dr. N. E. W. Anderson, Dr. S. A. B. Black, Dr. R. D. Harding, Dr. A. C. Howard, and Dr. T. H. L. Montgomery, Medical Officers, Nigeria. Dr. W. K. Connell becomes a Junior Surgical Specialist, and Dr. C. F. Shelton a Junior Medical Specialist, Tanganyika. Dr. H. M. Nevin has been appointed Pathologist II., Institute for Medical Research, in the Federated Malay States.

Dr. J. T. Lydon has been appointed Admiralty Surgeon and Agent for Kingstown, and Mr. P. J. Smyth for Dublin.

OBITUARY

JAMES HAIG FERGUSON, F.R.C.P., F.R.C.S. Edin., F.C.O.G.

CONSULTING GYNÆCOLOGIST TO THE LEITH HOSPITAL AND ROYAL INFIRMARY, EDINBURGH

WE regret to announce the death of the well-known surgeon and obstetrician, Dr. Haig Ferguson, which occurred on May 2nd at his house in Coates-crescent, Edinburgh, in his 73rd year.

James Haig Ferguson was born in 1862 the son of the Rev. William Ferguson, minister of Fossoway, and was educated at the Collegiate School, Edinburgh, and at the medical school of the University. A prominent student he graduated as M.B., C.M. Edin. in 1884, took the M.R.C.P. in 1887, was elected F.R.C.P. in 1889, and proceeded to the M.D. with honours in the following year. He obtained the F.R.C.S. Edin. in 1902, and from that time forward held a series of important posts connected with his chosen specialty as obstetrician and gynæcologist. He served as resident physician at the Infirmary, the Maternity Hospital, and the Edinburgh Hospital for Sick Children. He lectured on midwifery and gynæcology in the University medical school, was both gynæcological and clinical tutor at the infirmary, and was duly appointed assistant to the physician for diseases of women and obstetric physician to the New Town Dispensary. With such varied and excellent equipment in the three great branches of professional knowledge, it is not surprising that he proved to be a practical and successful lecturer and that his services were in demand as an examiner. He acted in this capacity in midwifery and gynæcology at the Royal College of Surgeons, Edinburgh, at the University of Edinburgh, and the University of Aberdeen, and he passed rapidly from assistant to full gynæcological physician at the institutions with which he was connected.

DR. FERGUSON

[Photograph by Bacon

He soon began to communicate to the medical press on obstetrical and gynæcological subjects, writing interesting notes for the *Edinburgh Medical Journal* and especially for the transactions of the Obstetrical Society of Edinburgh, while the reports of the Royal Infirmary contain also papers from him. He wrote a "Notebook of Obstetrical Nursing" in collaboration with the late Dr. F. W. N. Haultain, his colleague at the Public Dispensary, which went through several editions, the fifth one appearing in 1906; he collaborated also in a text-book of "Obstetrics and Gynæcology," and contributed to the "Encyclopædia Medica."

His academic and practical work and the all-round nature of his experience and acquirements fitted him inevitably for high official posts. Like many prominent Edinburgh men he started with presiding over the Royal Medical Society, later he was president of the Edinburgh Obstetrical Society—this twice with some interval, he served the Edinburgh Harveian Society in the same capacity, and was president of the Royal College of Surgeons of Edinburgh for the years 1929–31. He was an F.R.S. Edin. and received the hon. degree of LL.D. from his University and was one of the first Fellows of the College of Obstetrics and Gynæcology. In due course he became consulting physician to the Royal Infirmary, the Leith Hospital, and the Royal Maternity Hospital, while he was for a period chairman of the Central Midwives Board for Scotland. In this capacity he proved himself indeed the right man for the post. He dealt with the problems of the Board in a catholic spirit and was vigilant in seeing that the regulations were drawn in a generous manner, so that the Board was able to examine candidates for the certificate from continental countries and from the U.S.A., a certain reciprocity in registration becoming possible. He was of practical assistance to the General Medical Council in dealing with the situations arising both from the supply of suitable cases for teaching purposes and with the superintendence of the students' education. As a disciplinarian he was fair. He never hesitated to take any steps necessary to deal with unprofessional conduct among midwives, but he was sympathetic in his outlook and in particular he never forgot the public standpoint. As an example of his readiness to adjust the working of the Board to varying interests there may be mentioned his arrangement of a full-dress discussion on notification of puerperal pyrexia with the Obstetrical Society of Edinburgh and with representatives of the public authorities, when his freedom from prejudice stood him in good stead by securing the coöperation of general practitioners.

Ferguson worked at a very high pitch and it seems probable that his relatively early death was related to his unceasing activity and to the large demands on his professional attention. His periods of relaxation were few and took the form of spending short periods at Loch Rannoch. He will be greatly missed by patients, students, and professional colleagues, for he combined first-class professional competence with highly sympathetic personal qualities.

Dr. Ferguson, who was a member of the King's Bodyguard for Scotland (Royal Company of Archers), married in 1889 Penelope Gordon, daughter of the well-known surgeon, the late Sir Patrick Heron Watson, by whom he had one son and three daughters.

Prof. R. W. Johnstone writes: "Dr. Haig Ferguson's death leaves a great blank in the hearts of his friends. His strong but gracious personality never failed to leave an impress for good upon everyone with whom he came in contact. He was a man of handsome physical presence with a noble head and features, which, as age whitened his hair and care lined his face, became imbued with the very spirit of benevolence. His mere presence, as many a patient can attest, brought a helpful influence in all circumstances—comfort, encouragement, strength, good humour, gentleness, charity. An unusually high sense of duty dominated his whole character and life, involving self-sacrifice and self-expenditure to a degree that sometimes seemed almost quixotic but never other than wholly admirable and lovable to those less endowed with it than himself. Such was the charm of character and personality which he radiated that it tends to eclipse in one's mind the greatness of his more strictly professional attainments.

He was, however, a man with fine intellectual gifts. It was inevitable that such a man should obtain a very large practice, and he thus acquired a vast and varied practical experience. He was an exceptionally skilful obstetrician, endowed with that most important of all gifts in such work, patience. As a gynæcologist his sympathy and understanding led him to the heart of the psychological troubles that so often obscure the physical causes of the diseases of women, and gave him the unbounded confidence of his patients. As an operator he was sound and reliable rather than spectacular, and his results were very good. His professional interests were primarily clinical rather than scientific, and this is shown in his writings which are instinct with the wise judgment born of a wide practical experience. The same applies to his teaching, which while revealing a comprehensive knowledge of his subject was always mainly focused on the problem of how best to treat the individual patient. No student or visitor to his wards could fail to benefit from his clinical teaching, and probably none left without perceiving and acquiring something of his high sense of duty to his patients and of his high standard of professional conduct.

"The Transactions of the Edinburgh Obstetrical Society, of which he was twice president, show that Dr. Haig Ferguson was ever active in recording cases of special interest and in contributing papers on questions of practical importance. Amongst his recent contributions to obstetrics and gynæcology his modification of the axis-traction forceps is perhaps the most outstanding, the instrument being one of great practical value. He was also joint author of a well-known 'Combined Textbook' of both subjects, which recently went into a second edition. At the time of his last illness he was engaged in laboriously investigating the records of maternal mortality for the Scottish Department of Health.

"His patience, sagacity, and scrupulous fairness led to much administrative work being placed on his shoulders. He gave endless time and thought to the work of the Central Midwives Board for Scotland, of which he was a member from its inception and chairman for many years up to the time of his death. The Royal Maternity Hospital, the Royal Hospital for Sick Children, the Queen's Institute of District Nursing, and many other boards obtained his active and devoted service. The Royal College of Surgeons, of which he was president in 1929–30, and the 'Extramural School' also claimed much of his interest, while he never failed in attendance upon the meetings of the Obstetrical Society, in which his vast experience and sound judgment were held in the truest respect. The Lauriston Home for Rescue Work owed its inception in large measure to him, and its work and welfare were always close to his heart.

"He was fond of open-air sport, angling and archery for example, but his devotion to his work gave him little time to indulge in them. He loved hospitality and was the most genial of hosts, and the best of dinner-table companions. It would be easy to continue the catalogue of his interests and activities, but in the end one comes back to the man himself. He was in very truth a 'beloved physician,' and a perfect Scottish gentleman."

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society will be held to-day, Friday, May 11th, at the Miller General Hospital, Greenwich, London, S.E., at 8.45 P.M. Dr. Cassie Williams will give an address on cookery and its relation to medicine.

ALFRED RICHARDSON, M.B., B.S. Lond., F.R.C.S. Eng.

PROFESSOR, CLINICAL SURGERY, UNIVERSITY OF LEEDS; SURGEON, LEEDS GENERAL INFIRMARY

THE sudden death of Alfred Richardson on April 22nd at the age of only 49 years was a profound shock in medical circles and to his many friends in Leeds. He appeared to be the very embodiment of perfect health, gifted with magnificent physique, active, and happy in his work. We are indebted to Mr. L. R. Braithwaite for the following obituary notice:—

"Richardson was essentially a Leeds man. He was a brilliant student qualifying M.B., B.S., London, in 1907, and adding to his qualifying degrees distinction in pharmacology and honours in medicine. He became a house surgeon at the General Infirmary at Leeds and step by step was elected casualty officer, resident surgical officer, surgical registrar and tutor. During his residential appointments he gained the F.R.C.S. England, and was clearly destined for the surgical staff, to which he was elected as an honorary assistant surgeon in 1920, rising to the full staff in 1927.

"Amongst his many other appointments the one he loved best was that of visiting surgeon to the Ministry of Pensions Hospital, where he found himself in an atmosphere of camaraderie and courageous optimism which exactly suited him. The affection between him and his patients at this hospital has been vividly described, and was shown by the large attendance of ex-Service men at his funeral. It need hardly be said that he himself served throughout the war both at home and abroad. He was honorary consulting surgeon at the Ilkley Coronation Hospital, the Normanton and Castleford Hospital, and several others. He succeeded in gathering together a wide and busy practice, especially in areas north of Leeds, where his name was widely known. His services as an expert surgical witness were in constant demand and he had a very large practice in this branch of his profession, his patent sincerity and power of lucid exposition making him invaluable.

"Richardson's capacity for surgery as an art was remarkable. He was cautious, calm, gentle, and yet firm, having always uppermost in his mind the well-being of the patient. His value to the university as a clinical teacher has probably never been surpassed. He was a true 'text-book' man in that he tirelessly drove home the things that were needed to get a qualification; but he did much more than this, he taught the need for sympathy, gentleness, and most rigorous examination and investigation. His popularity with students was proverbial and no success pleased him more than this. When he was appointed professor of clinical surgery about a year ago it was felt that we had in sight the man who would some day lead the surgical side from the more senior chair, and were well satisfied that he would do it with the same quiet enthusiasm which characterised all his work. And those of us who met him so often in the course of the daily round will always value delightful recollections. He would come unexpectedly to one's theatre and look on with a merry twinkle in his eye and a jest on his lips. One would return the visit and be met by the same happy smile and a repartee humorous and caustic but never resentful.

"As a student he showed an unusual interest in and aptitude for sports; his physique made him a redoubtable boxer and footballer. He retained the closest interest in sport, especially in the medical school, up to the time of his death. All loved Richardson as a brother, and as such we mourn him."

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Lotteries and Hospital Finance

IN the House of Lords on May 1st the debate was resumed on the second reading of the Betting and Lotteries Bill.—Lord SOMERLEYTON said there was still a general opinion that the voluntary hospitals of this country were in danger and ought to be supported by sweepstakes or lotteries. The hospitals were, in fact, in a very flourishing condition considering the bad times through which the country had passed. In the year 1931 the aggregate surplus of the London hospitals was £76,000; in 1932 it was £101,000, and it was pretty certain they would be better still for last year. Voluntary gifts to provincial hospitals amounted in 1930 to £12,734,000, and in 1931 to £11,568,000; including London the total for 1931 was £13,741,000. All this voluntary support would be jeopardised by sweepstakes and lotteries.—Lord LUKE said that if lotteries on a large scale were to be held in aid of hospitals they would dry up the present sources of voluntary effort, but the Bill wisely permitted competitions which contained an element of skill.—The Earl of FEVERSHAM, replying to the debate, said that if the State inaugurated or tolerated the inception of lotteries for the purpose of raising money for hospitals, there would not be the same response from private persons or the same individual interest taken by private persons in their maintenance.—The Bill was read a second time.

Bills Advanced

In the House of Commons on May 1st the Contraceptives Bill and the South Devon and East Cornwall Hospital, Plymouth, Royal Albert Hospital, Devonport, and Central Hospital, Plymouth (Amalgamation, &c.) Bill were introduced and read a first time.

In the House of Lords on May 2nd the Workmen's Compensation (Coal Mines) Bill and the Water Supplies (Exceptional Shortage Orders) Bill were read a second time.

HOUSE OF COMMONS

WEDNESDAY, MAY 2ND

Sanitary Conveniences in Highlands of Scotland

Mr. LEONARD asked the Secretary of State for Scotland if he was aware that a complaint was lodged on Jan. 31st, 1933, and a copy sent to the Department of Health, regarding the structural, sanitary, and other defects of the farm of Udale, Ross, and Cromarty, and that the local authority decided that it was not reasonably practicable to introduce water into the houses or to provide water-closets, and that on Dec. 29th, 1933, his department reported that its engineering inspector had advised that it was reasonably practicable to provide water-closets and introduce water; and whether any steps had been taken to force the local authority to carry out its statutory duties.—Sir GODFREY COLLINS replied: The answer to the first part of the question is in the affirmative. With regard to the second part, the county council have taken steps to secure the introduction of water into the houses, and the provision of a chemical closet for each house. With regard to the third part, there is no further action which, in the circumstances of this case, I can take.

Charges at a Municipal Maternity Home

Mr. ANSTRUTHER-GRAY asked the Minister of Health whether his attention had been drawn to the fact that the Ilford council maternity home had charged a police constable £13 10s. for 16 days that his wife was in the home; and, in view of the declared practice of the home to base their charges on the income of the patient, he would inquire into the case, in view of the fact that a police constable's wages were insufficient to support so heavy a charge.—Mr. SHAKESPEARE replied: The question of the charges to be made at this home is a matter within the discretion of the town council, but my right hon. friend will communicate with the council and inform my hon. friend of the result.

Suggested Flogging for Burglars

Mr. POTTER asked the Home Secretary if, having regard to the increasing number of burglaries and to the hardship and suffering caused to those affected thereby, he would introduce legislation making it a condition that, in conjunction with punishment inflicted upon the offenders, there should be administered so many strokes of the cat as may be recommended by his medical advisers in such cases.—Sir J. GILMOUR: There has been a large increase in recent years in cases of "breaking and entering," but the increase has been comparatively small in the particular crime of burglary, which is limited to entry of dwelling-houses by night. A large number of offences of house-breaking and shopbreaking are committed by persons, often young persons or children, who enter small houses or shops which are temporarily unoccupied and take small sums of money. Of the persons found guilty in 1932 of breaking and entering one-third were under 16 years of age, and over one-half were under 21 years of age. I do not think that the suggestion of my hon. friend would be a suitable method of dealing with the situation.

Coal-miners and Silicosis

Mr. DAVID GRENFELL asked the Home Secretary the number of men employed in the coal-mining industry who had been certified to be disabled through silicosis; the number partially disabled; the number in receipt of compensation; and the number of fatal cases recorded since Jan. 1st.—Sir JOHN GILMOUR replied: Since June 1st, 1931, when the medical board was appointed, up to April 30th, 1934, there have been 437 coal-miners certified by the board as disabled; 129 of these were certified as partially disabled. Earlier comparable figures are not available. From Feb. 1st, 1929, when the Various Industries (Silicosis) Scheme came into operation, up to the end of 1932, compensation was paid in 143 cases of disablement. There was a large number of cases in 1933, but the precise figure is not yet available. The number of deaths certified since Jan. 1st last is 14.

THURSDAY, MAY 3RD

Sickness Benefit and Public Assistance

Mr. HOLDSWORTH asked the Minister of Health whether he was now in a position to reply to the representations made to him by the National Conference of Friendly Societies concerning Section 48 of the Poor Law Act, 1930, in which attention was drawn to the wrongful action taken by the London County Council whereby members of friendly societies had been having their sickness benefit wholly included when incomes were being assessed, or the needs tests being applied, in respect of applications received by that body for public assistance; and whether he now proposed, as a result of what transpired in London, to issue a special instruction on the subject to all public assistance committees.—Sir HILTON YOUNG replied: I have now received further legal advice in regard to the proper interpretation of Section 48 of the Poor Law Act, 1930, and I propose to communicate the effect of that advice to public assistance authorities at an early date, and to furnish the National Conference with a copy of the circular to be issued.

MONDAY, MAY 7TH

Milk Publicity Campaign

Mr. MACLAY asked the Minister of Agriculture whether he would draw the attention of the Milk Marketing Board to the importance of commencing as early as possible an extensive advertising campaign to encourage the public to consume more milk.—Mr. ORMSBY-GORE, First Commissioner of Works, replied: My right hon. friend is quite satisfied that the Milk Marketing Board fully realise the desirability of encouraging the public to consume more milk; and the hon. Member will recollect that the proposals which he explained in his statement on milk policy

in this House on Feb. 22nd include the provision of funds for a publicity campaign. Schemes for that purpose are now being formulated.

Cleanliness of Imported Milk Products

Mr. LAMBERT asked the Minister of Health if he was satisfied that all imported milk products were produced from healthy animals kept in conditions of cleanliness.—Mr. SHAKESPEARE, Parliamentary Secretary to the Ministry of Health, replied: My right hon. friend is not in a position to say that all milk products are made from healthy animals kept in conditions of cleanliness, but he understands that most of the imported products are made from pasteurised milk or cream.

Mr. LAMBERT: Are we to understand that any kind of muck can be brought into this country under the name of butter, made under the most filthy conditions?

Mr. SHAKESPEARE: I am informed that no danger to public health is involved.

Lieut.-Colonel ACLAND-TROYTE: Is there no inspection at the port to see what is the condition of the butter brought in?

Mr. HANNON: Are we to understand that the Government can introduce no machinery to test the quality of the original milk from which these products are manufactured?

Mr. SHAKESPEARE: Of course we can introduce machinery, but I should not like to come to the House and ask for a large expenditure which I could not justify.

Mr. HANNON: Are the people of this country to feed on milk products made from milk of the composition of which we have no knowledge whatever?

Sir W. WAYLAND: Has the hon. gentleman ever visited a Polish or Russian dairy farm?

Mr. SHAKESPEARE said that if the product was in liquid form the Ministry had ample powers and regulations with regard to bacteriological examination, but as regards non-liquid products he was informed there was no danger to health.

TUESDAY, MAY 8TH

Milk-borne Diseases

Brigadier-General CLIFTON BROWN asked the Prime Minister whether he would publish the report of the scientific committee appointed by the Economic Advisory Council to consider the incidence of milk-borne diseases; and whether steps would be taken to submit its findings to agricultural interests, as well as to medical authorities, before any legislative action was taken thereon.—Mr. MACDONALD replied: The Committee's report has only just been received, and it has not yet been possible to consider the question of its publication. My hon. and gallant friend may rest assured that the interests of every section of the population will be carefully borne in mind by H.M. Government when they review the conclusions reached by the Committee.

Mr. LAMBERT asked whether, as this was a committee paid for by the taxpayer, the taxpayer could not have the benefit of their advice.

Mr. MACDONALD said that the rule had been that these reports were confidential until they were published; otherwise they remained confidential.

Mr. LAMBERT asked if he was aware that this question of milk-borne diseases was of extreme importance as affecting the agricultural industry, and if he would, if possible, publish the report.

Mr. MACDONALD said that as soon as he had had an opportunity of reading the report himself he would decide whether it should be published or not. Naturally, all the bias was always in favour of publication.

Warren Fisher Report and Dental Officers

Captain ELLISTON asked the Secretary to the Treasury whether the recommendations of the Warren Fisher Report could be extended to include dental officers as submitted in a memorandum by the British Dental Association.—Mr. HORE-BELISHA replied: The Committee on the Medical branches of the Defence Services suggested that some of their proposals in regard to the medical services might with advantage be applied to the dental services. I understand that representations have been made by the British Dental Association to the Defence Departments and that this question is now under consideration.

Charges for School Medical Treatment

Mr. DAVID DAVIES asked the Parliamentary Secretary to the Board of Education how much money was recovered fromparents in respect of charges for medical treatment during the last school year.—Mr. RAMSBOTHAM replied: The amount recovered from parents in respect of the medical treatment of children attending public elementary schools during the financial year 1931–32, the latest period for which complete audited accounts of local education authorities are yet available, was £69,370.

MEDICAL NEWS

English Conjoint Board

At the recent final examination of the Board the following candidates were approved in the subjects indicated, but are not yet eligible for the diploma of the Colleges:—

Pathology.—S. Alankaram, Madras and Roy. Free; C. Anderson, St. Bart.'s; W. G. R. Ashley-Emile, Middx.; A. C. Ashton, Manch.; S. H. Awad, Univ. Coll. and Glasg.; K. C. Bailey, Camb. and St. Thos.; E. B. D. Bangay, St. Bart.'s; Mary Barber, Roy. Free; C. Bard, Lond.; R. I. Bence, Oxon. and Lond.; H. B. Birnbaum, Glasg.; J. R. Bodington, Camb. and Lond.; E. J. J. Borges, Bombay and Middx.; D. M. Bressler, St. Bart.'s; B. B. Bridges, Camb. and Guy's; J. L. Brown, Liverp.; N. P. Brown, Camb. and Middx.; R. W. D. Brownlie, Guy's; E. W. Burstal, St. Bart.'s; ♦W. P. Cargill, Manch.; R. M. Case, Birm.; W. W. Cashmore, Camb. and Guy's; R. C. F. Catterall, Camb. and Univ. Coll.; J. G. Chappel, Univ. Coll.; R. Clarke, Oxon. and St. Mary's; Gladys E. Clyne, Roy. Free; S. Cohen, St. Barts.'s; N. D. Cousins, Manch.; F. F. Croft, St. Bart.'s; L. M. Curtiss, St. Bart.'s; A. P. Dale-Bussell, Guy's; M. C. Damkengrit, Camb. and St. Thos.; S. M. Davidson, Camb. and St. Mary's; C. E. M. de Gruchy and G. C. Denny, Guy's; S. Devi, Roy. Free; E. W. Dunkley, Lond.; K. G. Eckersley, Leeds; R. Farncombe, St. George's; I. A. Feldman, Leeds; J. D. Fergusson, Camb. and St. Thos.; B. W. Fickling, St. George's; W. J. Finegold, Charing Cross; I. Finer, Guy's; H. Firman, Manch.; I. C. Fletcher, Camb. and Middx.; J. R. Forbes, Guy's; Margaret J. Foster, Camb. and Univ. Coll.; Joan L. Franklin-Adams, Roy. Free; E. Galinsky, Univ. Coll.; J. E. Giesen, Guy's; A. B. F. Gibson, Camb. and St. Thos.; P. Glaser, King's Coll.; C. H. Goodliffe, Birm.; M. E. Gordon, Cardiff; B. S. Grant, Lond.; E. O'D. C. Grattan, Camb. and St. Thos.; B. J. Green, and S. G. Griffin, Liverp.; J. A. G. Hair, Univ. Coll.; Irene G. Hamilton, Bristol; E. E. Harris, Camb. and St. Bart.'s; R. L. Hartley, Liverp.; G. R. Hawkes, Camb. and Liverp.; H. F. G. Hensel, Lond.; T. H. Hills, Guy's; C. A. Hinds Howell, Oxon. and St. Bart.'s; J. Holden, Leeds; D. A. B. Hopkin, St. Mary's; J. J. V. Hopkins, St. Bart.'s; J. H. Hovell, Charing Cross; J. E. Ives, Camb. and Univ. Coll.; J. I. A. Jamieson, Manch.; J. E. V. Jones, Camb. and St. Thos.; O. L. Jones, Liverp.; D. Joy, Univ. Coll.; G. H. W. Keates, Guy's; W. E. Kershaw, Manch.; A. W. Khan, Manch.; E. L. Kirstein, Univ. Coll.; E. H. Kitching, Leeds; F. B. Lake, Guy's; M. Lederman, Westminster; M. J. Levi, Leeds; W. Libertson, St. Bart.'s; W. N. Lippitt, Birm.; O. Lloyd, Middx.; J. F. Lockwood, Guy's; M. C. W. Long, St. Mary's; E. B. McDowall, Camb. and St. Thos.; H. M. McGladdery and R. McGladdery, St. Bart.'s; K. M. Mayall, Camb. and St. George's; Ellen Mayer, King's Coll.; A. B. G. Mein, Westminster; A. G. H. Menzies, Liverp.; W. J. Mitchell, Guy's; A. Moore, Univ. Coll.; D. C. Moore, Manch.; J. H. Moseley, Camb. and St. Thos.; A. Mukerji, Middx.; C. W. F. Outred, Guy's; W. O. G. Paget, St. Bart.'s; G. R. C. Palmer, St. Thos.; R. L. Parish, Manch.; G. W. V. Pegge, St. Mary's; S. Phillips, King's Coll.; E. H. Platts, Leeds; A. W. Probert, Univ. Coll.; J. Rabinovitch, Leeds; J. Rapoport, St. Mary's; H. W. Rees, Middx.; W. G. S. Roberts, Birm. and St. Thos.; G. S. Robinson, Camb. and Liverp.; J. Robyns-Jones, Liverp.; J. S. Ross, Camb. and St. Thos.; Jean Ross, Univ. Coll.; L. M. Rouillard, St. Thos.; C. Royle, Manch.; C. R. St. Johnston, Birm.; S. V. Sansom, St. Bart.'s; B. J. Shaw, Birm.; J. A. Sidebottom, Guy's; H. Silman, Leeds; A. S. R. Sinton, Westminster; R. G. Smithson, Leeds; B. P. Stone, King's Coll.; Phyllis J. M. Sykes, Univ. Coll.; E. W. Tapley, Manch.; Dorothy H. Thomas, Univ. Coll.; J. B. Tointon, Camb. and St. Thos.; R. P. Tong, Liverp.; B. M. Truscott, Middx.; R. W. D. Turner, Camb. and St. Thos.; M. M. Waldman, Westminster; P. A. Walford, Camb. and St. Thos.; T. J. Walters, St. Mary's; F. G. Ward, Oxon. and St. Bart's; M. Watkins, St. Mary's; J. D. S. Watling and C. W. K. Willard, Univ. Coll.; G. N. M. Wishart, Manch.; H. L. Wolfe, St. Bart.'s; G. M. Woolford, St. Thos.; and H. Yarrow and J. G. Youngman, St. Bart.'s.

Medicine.—N. Angel, Birm.; T. G. Armstrong, Camb. and Lond.; E. C. Atkinson, St. Bart.'s; Margaret D. Baber, Univ. Coll.; J. C. Baillie, King's Coll.; Mary Barber, Roy. Free; G. Bates, Birm.; R. I. Bence, Oxon. and Lond.; D. Bickler, Leeds; J. R. Bodington, Camb. and Lond.; E. J. J. Borges, Bombay and Middx.; D. M. Bressler, St. Bart.'s; Jean M. Cass, Roy. Free; R. Clarke, Oxon. and St. Mary's; S. G. Clayton,

King's Coll.; J. E. Darlow, Guy's; G. B. Davis, King's Coll.; N. J. Dias, St. Bart.'s; Dorothy S. Radcliffe Drew, Roy. Free; F. I. Evans, Camb. and Guy's; J. D. Fergusson, Camb. and St. Thos.; H. P. Fernandes, St. Bart.'s; Mercia Force-Jones, West Lond.; J. French and L. D. B. Frost, St. Bart.'s; D. J. Gilbert, King's Coll.; A. J. Glazebrook, St. George's; M. E. Gordon, Cardiff; E. O. C. Grattan, Camb. and St. Thos.; C. E. Greenwood, Oxon. and King's Coll.; P. R. Greeves, Oxon. and Middx; E. E. Harris, Camb. and St. Bart.'s; G. W. Hayward, St. Bart.'s; C. C. Hurst, Manch.; J. H. Lankester, Camb. and St. Thos.; W. Libertson, St. Bart.'s; W. N. Lippitt, Birm.; A. J. McCall, Liverp.; D. de la C. MacCarthy, St. Bart.'s; M. L. Meade-King, Camb. and Westminster; A. Moore, Univ. Coll.; G. H. Moore, Manch.; P. Morris, Westminster; R. M. Noordin and A. J. Owston, St. Bart.'s; W. H. Philippe, Camb. and St. Thos.; W. H. A. Pieton, Oxon. and King's Coll.; R. M. G. Pole, St. Bart.'s; W. W. Roberts, Birm. and Sheff.; Katharine C. Rogers, Roy. Free; D. Sanyal, Lond.; I. C. Sarwal, Bombay and St. Bart.'s; S. R. Saunders, Cardiff; S. G. Shippard, King's Coll.; N. W. Sivolella, St. Bart.'s; A. F. Stallard, Camb. and St. Bart.'s; E. W. Tapley, Manch.; M. J. H. Thomas, Univ. Coll.; R. W. D. Turner, Camb. and St. Thos.; J. K. B. Waddington, Liverp.; B. Weiner, St. Bart.'s; and K. H. Wright, Guy's.

Surgery.—S. Alankaram, Roy. Free; A. G. V. Aldridge, Camb. and Birm.; I. J. Amorin, Manch.; W. G. R. Ashley-Emile, Middx.; C. H. Bliss and J. W. F. Brown, St. Thos.; E. J. Bury, Camb. and St. Mary's; I. Byer, St. Bart.'s; T. S. Cave, Camb. and King's Coll.; J. G. Chappel, Univ. Coll.; Gladys E. Clyne, Roy. Free; R. H. Dale, Camb. and St. Bart.'s; R. S. Dale, St. Mary's; J. R. Davidson, Univ. Coll.; D. H. Davies, Camb. and Middx.; G. M. Denning, Bristol and St. Mary's; A. R. O. Denton, Guy's; K. C. Eden, Univ. Coll.; T. S. Eddy and A. G. Edwards, Guy's; D. M. Evans, St. Bart.'s; E. W. R. Fairley, St. Thos.; E. L. Fisher, St. Bart.'s; P. S. Fox, Leeds; C. S. France, Manch.; C. M. Fysh, St. Thos.; A. B. F. Gibson, Camb. and St. Thos.; K. D. Gibson, St. George's; V. R. Ginde, Bombay and West Lond.; C. H. Goodliffe, Birm.; G. B. Grayling, Roy. Inf. Leicester; H. A. Hamilton, Camb. and Guy's; M. Hamilton, Univ. Coll.; W. H. C. M. Hamilton, Camb. and St. Thos.; G. R. Hawkes, Camb. and Liverp.; F. Janus, Manch.; F. J. G. Jefferiss, St. Mary's; J. R. R. Jenkins, St. Bart.'s; B. S. Jirge, West Lond.; D. R. Jones, Cardiff; P. G. C. Jones, Guy's; T. E. Jones-Davies, Camb. and St. George's; A. W. Khan, Manch.; M. B. Khan, Leeds; N. F. Kirkman, Manch.; J. L. Lanceley, Liverp.; W. A. Law, Camb. and Lond.; M. C. W. Long, St. Mary's; G. G. Macdonald, Univ. Coll.; E. B. McDowall, Camb. and St. Thos.; J. A. Mansi, St. Bart.'s; R. A. Mathews, Bristol; G. H. Moore, Manch.; R. S. Morris, Camb. and St. Thos.; E. J. Moynahan, Univ. Coll.; Edith A. S. Parry-Evans, Roy. Free; H. F. Patrick and S. H. Pearse, St. Thos.; G. W. V. Pegge, St. Mary's; R. Peters, Univ. Coll.; R. A. Piachaud, Ceylon and Univ. Coll.; T. H. Pierce, Liverp.; M. R. Preston, Middx.; E. J. Pryn, Guy's; R. H. Purnell, St. Bart.'s; S. Ramgoolam, Univ. Coll.; E. A. Richards, St. Thos.; Katharine C. Rogers, Roy. Free; I. Slome, Lond.; K. Soddy, Univ. Coll.; J. Starkie, Manch.; J. Stern and F. G. St. C. Strange, Lond.; J. C. Thomas, Univ. Coll.; Dorothy J. Thompson, Camb. and Bristol; R. C. H. Tripp and R. J. Vakil, St. Thos.; P. A. Walford, Camb. and St. Thos.; S. M. Whitteridge, Guy's; O. C. Wilkinson, Birm.; T. M. Williams, St. Thos.; P. L. E. Wood, Camb. and St. Thos.; R. F. Wyatt, St. Thos.; P. L. Young, St. Bart.'s; and Betty M. Zeal, Univ. Coll.

Midwifery.—A. G. V. Aldridge, Camb. and Birm.; A. W. H. Ashbery, Birm.; R. A. J. Asher, Lond.; G. T. Balean, Guy's; Phyllis M. Ball, Birm.; C. R. Barker, Univ. Coll.; D. Bhatia, West Lond.; A. P. Booth, Lond.; H. S. Brodribb, St. Bart.'s; J. A. B. Burnett, Charing Cross; Margaret M. B. Carey, Roy. Free; R. S. Carpenter, Lond.; Jean M. Cass, Roy. Free; R. C. F. Catterall, Camb. and Univ. Coll.; H. G. Cereseto, St. Bart.'s; J. G. Chappel and S. C. Chatterjee, Univ. Coll.; W. E. Clarke, Charing Cross; W. B. Clegg, Guy's; A. B. Concanon, Liverp.; J. H. L. Conway-Hughes, St. Bart.'s; E. C. Cordeaux, Middx.; F. H. Culshaw and R. H. Dale, St. Bart.'s; J. R. Davidson, Univ. Coll.; D. A. Davies, Guy's; W. J. F. Davies, Cardiff; Bessie Dodd, Liverp.; E. W. Dunkley, Lond.; R. S. Ellis-Brown, Guy's; D. M. Evans, St. Bart.'s; E. W. R. Fairley, St. Thos.; A. Fearnley, King's Coll.; B. W. Fickling, St. George's; A. R. Ford, St. Bart.'s; I. M. Fradkin, Lond.; E. Galinsky, Univ. Coll.; V. R. Ginde, West Lond.; Muriel C. Goodchild, Roy. Free; C. H. Goodliffe, Birm.; B. S. Grant, Lond.; S. A. Greenwood-Penny, St. George's; W. E. Hadden, St. Thos.; H. A. Hamilton, Camb. and Guy's; M. J. Harris, Guy's; G. R. Hawkes, Camb. and Liverp.; G. H. M. Hemsted, St. Mary's; H. F. G. Hensel, Lond.; C. F. Heys, Guy's; K. F. W. Hinson and D. A. B. Hopkin, St. Mary's; J. J. V. Hopkins, St. Bart.'s; J. H. Hovell, Charing Cross; J. H. Hudson, Leeds; Ruth Hull, King's Coll.; J. J. Human, St. Mary's; B. S. Jirge, West Lond.; D. M. Jones, St. Bart.'s; R. N. Jones, Birm.; H. Kaplan, Cape and Guy's; M. R. Kark, Guy's; A. H. Khan, Birm.; E. L. Kirstein, Univ. Coll.; F. B. Lake, Guy's; F. H. Lamb, St. Thos.; M. Lederman, Westminster; A. R. Lee, Sheff.; F. D. M. Livingstone, Camb. and St. Bart.'s; O. Lloyd Middx.; M. C. W. Long, St. Mary's; Christia F. Lucas, Birm.; A. J. McCall, Liverp.; R. McDonald, Guy's; E. B. Z. Masterman, Camb. and St. Bart.'s; J. G. Mathias, Lond.; D. Matthews, Cardiff; A. B. G. Mein, Westminster; R. L. Moody, St. Thos.; G. H. Moore, Manch.; A. Mukerji, Middx.; H. Nagler, Charing Cross; J. G. Nel, St. Bart.'s; W. S. Noble, Guy's; A. R. H. Oakley, Middx.; H. E. Osen, St. Bart.'s; S. Paletz, St. George's; Edith A. S. Parry-Evans, Roy. Free; Mary Paulosky, West Lond.; A. Pearlman, Middx.; A. L. Peers, Guy's; E. J. Perks, Bristol; S. Phillips, King's Coll.; Lillian M. Pickford, Univ. Coll.; G. Pollack, St. Mary's; T. S. Protheroe, Guy's; R. H. Purnell, St. Bart.'s; C. O. Ribeiro, Univ. Coll.; D. T. Richards, Cardiff; S. Roberts, Bristol; Katharine C. Rogers, Roy. Free; M. Rooms and Eileen G. Rose, Leeds; W. T. Ross, Cape and St. Bart.'s; C. R. St. Johnston, Birm.; J. K. Samuel, St. Thos.; L. E. Sealy, Bristol; N. H. Seaton, Univ. Coll.; C. W. T. Shuttleworth, Guy's; J. Simon, Lond.; A. S. R. Sinton, Westminster; T. Smallhorn, St. Bart.'s; A. C. Spence, Camb. and Middx.; F. G. St. C. Strange, Lond.; D. W. I. Thomas, St. George's; J. C. Thomas, Univ. Coll.; M. J. H. Thomas, Univ. Coll.; R. P. Tong, Liverp.; B. M. Truscott, Middx.; J. K. B. Waddington, Liverp.; W. Waks, St. Bart.'s; M. M. Waldman, Westminster; J. St. J. F. W. Wallace-Collett, Lond.; T. J. Walters, St. Mary's; M. Watkins, St. Mary's; F. H. Weston, Dubl. and Guy's; D. O. Wharton, Camb. and Manch.; S. M. Whitteridge, Guy's; O. C. Wilkinson, Birm.; J. G. Williams, Westminster; P. M. Wright, St. Bart.'s; A. R. Yates, Lond.; and Winifred F. Young, Camb. and King's Coll.

University of London

During the period 1934–38 the faculty of medicine will be represented in the senate by Mr. H. L. Eason, M.S. (reappointed), and Dr. A. M. H. Gray. Mr. W. Girling Ball, F.R.C.S., will represent the general medical schools.

University of Birmingham

Dr. Stuart McDonald has been appointed lecturer in pathology in the university. He is at present demonstrator of pathology at the University of Durham College of Medicine, Newcastle-upon-Tyne.

Royal Medico-Psychological Association

The subject of the fifteenth Maudsley lecture, which Lord Macmillan is delivering to this association on Thursday, May 17th, at 3 P.M., will be the Professional Mind. The lecturer is president of the National Institute of Industrial Psychology. The meeting will take place at Manson House, 26, Portland-place, London, W.1.

Epsom College

The Council of Epsom College will shortly award a pension of £30 a year to a duly qualified medical man of not less than 55 years of age. If the candidate is a single man or a widower his income, independent of any allowance from the College or from the Royal Medical Benevolent Fund, must not exceed £100 per annum. Forms of application should be obtained forthwith from the Secretary, Epsom College, 49, Bedford-square, W.C.1, and must be returned completed to him not later than May 30th, 1934.

Tuberculosis Scholarships in Rome

The Italian Fascist National Federation against Tuberculosis has placed at the disposal of the International Union against Tuberculosis six scholarships at the Benito Mussolini Institute in Rome. They are each of a value of 6000 lire, plus board and lodging, and are intended to enable foreign medical practitioners to stay at the institute and follow a course of studies. This stage of eight months will correspond with the academic year (from Nov. 15th to July 15th) interrupted by the usual holiday periods.

The scholarships will preferably be awarded to young physicians who are already familiar with tuberculosis problems, and the kind of work undertaken will be subject to agreement with the director of the institute.

Application should be made through the secretary of the National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock-square, London, W.C. 1, not later than July 1st.

London School of Hygiene and Tropical Medicine

The 1934–35 course of study at the school, which qualifies students to sit for the University of London diploma in public health, and covers a period of nine months' whole-time work, will begin on Oct. 1st. An open competition will be held on June 28th–29th for the Fishmongers' Company studentship which carries a free place in the course. Applications for this studentship must be sent in by June 18th to the secretary of the school, Keppel-street, Gower-street, W.C.1.

The Langley Memorial prize, of the approximate value of £21, is open to competition amongst officers of the West African medical staff, whether on the active or retired list. The award will be made for the best paper on tropical medicine or surgery; tropical hygiene and sanitation; or tropical entomology and parasitology. Special consideration will be given to original work. Papers must be delivered to the secretary of the school before Oct. 1st.

Royal College of Physicians of Edinburgh

A quarterly meeting of the college was held on May 1st, with Dr. Edwin Bramwell, the president, in the chair. Dr. Francis William Murray Cunningham (Hove, Sussex) was introduced and took his seat as a fellow. Dr. William Lindsay Kinnear (Dundee), Major James Henry Barrett, I.M.S., and Dr. David Rhys Lewis (Swansea) were elected to the fellowship. Dr. Robert Thin was re-elected a representative of the college on the conjoint committee of management of the triple qualification.

It was announced that the Cullen prize had been awarded equally between Sir Frederick Menzies and Lieut.-Colonel A. G. McKendrick.

Medical Tour in Poland

Those joining the medical tour to Poland, which is being arranged by the Royal Institute of Public Health, will leave London on August 2nd, arriving at Danzig on August 6th. A special visit will be paid to Inowroclaw, an inland watering-place with medical baths for dealing with cases of rheumatism, arthritis, and throat disease. On August 7th the party will reach Warsaw, where the hospitals and clinics will be inspected and an opportunity to visit the sanatorium at Otwock will be given. August 8th will be spent in Cracow, and on the 9th there will be a reception by the civic authorities of Gydnia. The party will reach London again on August 13th. Passports will be necessary, but Polish visas will be granted free for this tour. Further information may be had from the secretary of the institute, 23, Queen-square, London, W.C.1.

Research Fellowships in Tuberculosis

The Dorothy Temple Cross research fellowships in tuberculosis for 1934–35 will shortly be awarded by the Medical Research Council. The object of these fellowships is to give special opportunities for study and research to workers who intend to devote themselves to the advancement by teaching or research of curative or preventive treatment of tuberculosis. Candidates must be British subjects and must possess suitable medical, veterinary or scientific qualifications, and preference will be given to those who wish to make their studies or inquiries outside Great Britain. The value of the fellowships awarded will depend upon the standing and qualifications of the candidate, but will not be less than £350 per annum, and they will as a rule be tenable for one year, exclusive of allowances. It may also be possible to award a senior fellowship of considerably greater value to a specially well-qualified candidate who wishes to undertake an intensive study of some particular problem of tuberculosis at a chosen centre of work in another country. Further particulars and forms of application are obtainable from the secretary of the Council, 38, Old Queen-street, Westminster, London, S.W.1. Applications must be made by June 1st.

Liverpool Psychiatric Clinic

The annual meeting of this clinic was held on May 7th, with Dr. W. M. Frazer, medical officer of health for Liverpool, in the chair. The speakers were Dr. Doris Odlum, honorary secretary of the National Council for Mental Hygiene, and Dr. S. Barton Hall, an honorary physician of the clinic. Dr. Odlum spoke on mental health and the community, and Dr. Barton Hall described the work of the clinic during the past ten years. It claims to be one of the first, perhaps the first, psychiatric out-patient clinic to be established outside London; it commenced its activities in 1924 thereby antedating the recommendations of the 1930 Mental Treatment Act, with regard to the establishment of out-patient clinics, by some six years. The experience has been that "in a very considerable proportion not only of the psychoneurotic but of the early mental cases, the problem is amenable to skilled psychological handling and a permanent readjustment between individual and environment can be brought about with some rapidity and without having recourse to measures, such as segregation away from home, which the public are still accustomed to regard as severe." It is hoped that in the near future an increase in trained staff will permit of an increase in attendances at the clinic and will also help to meet the ever-growing demand both for individual instruction and for lectures in psychological medicine.

National Temperance Hospital

The eighth annual Macalister lecture will be delivered at this hospital on Thursday, June 21st, at 9 P.M., when Dr. Robert Hutchison will speak on praise and dispraise of doctors.

Ladies' Medical Golfing Society

The spring meeting was held at Oxhey Golf Club on May 4th, 1934. The results were as follows: Canny Ryall Challenge Cup and Memento: Mrs. McCullagh, 75 net. Division I.—Scratch prize: Miss Dix-Perkin and Mrs. Russell Smith tied at 90. Handicap prize: (1) Mrs. Russell-Smith, (2) Mrs. Relph, (3) Mrs. Perry. Division II.—Scratch prize: Lady Goadby, 100. Handicap prize: (1) Mrs. McCullagh, (2) Mrs. Mortimer Woolf, (3) Mrs. Gardiner-Hill tied with Lady Goadby. Best Ball prize: Mrs. Russell-Smith and Mrs. Bain, 78½. 12 Hole Bogey Greensomes: Miss Sheila Dudgeon and Miss Betty Marriage, all square.

Royal Photographic Society Exhibition

The series of photographs by Lieut.-Colonel F. D. S. Fayrer, I.M.S. retd., now on view at the galleries of the Royal Photographic Society in Russell-square, provides an interesting record of a life spent in India. From the unlimited subjects at his disposal Colonel Fayrer has succeeded in presenting in a very attractive way many impressions of the daily life of India, its architecture, and the varying types to be met with amongst its people. One portrait in particular—No. 7, The Old Havildar—bears a striking resemblance to one of our famous literary men. The exhibition will remain open on week-days until May 31st.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, May 15th.

Special Meeting of Fellows, 5 P.M. General Meeting of Fellows, 5.30 P.M.

WEDNESDAY.

Surgery: Subsection of Proctology. 5 P.M. Annual General Meeting. Surgical Treatment of Carcinoma of the Colon. Discussion to be opened by Dr. Fred W. Rankin (Lexington, Kentucky) and Dr. T. de Martel (Paris). Sir Charles Gordon-Watson and Mr. J. P. Lockhart-Mummery will follow.

THURSDAY.

Dermatology. 5 P.M. (Cases at 4 P.M.) Annual General Meeting. Dr. G. B. Dowling: 1. Localised Myxœdema with Hyperthyroidism. 2. Pustular Psoriasis. Dr. F. A. Silcock: 3. Leprosy: Mixed Nodular and Anæsthetic Type. Dr. Hugh Gordon: 4. Sarcoid. 5. Peculiar Form of Urticaria.

Neurology. 8.30 P.M. Annual General Meeting. Pathological Meeting.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, May 14th.—8 P.M., Annual General Meeting. 8.30 P.M., Prof. George E. Gask: Clean Wounds, Ancient and Modern (annual oration).

CHELSEA CLINICAL SOCIETY.

TUESDAY, May 15th.—7.30 P.M. (at the Hotel Rembrandt, Thurloe-place, S.W.), dinner, followed by a discussion on Ophthalmic Notes on the Air Force Pilot Overseas, opened by Squadron-Leader P. C. Livingston, R.A.F.

NORTH-WEST LONDON MEDICAL SOCIETY.

TUESDAY, May 15th.—9.30 P.M. (at the Regal Rooms, Finchley-road, N.W.), Dr. H. Avery: Diagnosis and Treatment of Common Gastric Disorders.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, Portland-place, W.

THURSDAY, May 17th.—7.45 P.M., Demonstration. 8.15 P.M., Prof. W. Schüffner (Amsterdam): Recent Work on Leptospirosis (lantern slides).

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, W.

THURSDAY, May 17th.—8.30 P.M., Dr. Alfred Adler: Presidential Address.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

THURSDAY, May 17th.—3 P.M. (at Manson House, Portland-place, W.), Lord Macmillan: The Professional Mind (Fifteenth Maudsley Lecture).

ROYAL INSTITUTE OF PUBLIC HEALTH.
MAY 15th to 20th.—Congress at Norwich.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
MONDAY, May 14th, to SATURDAY, May 19th.—MAUDSLEY HOSPITAL, Denmark Hill, S.E. Course in Psychological Medicine; afternoons.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Course in Dermatology; afternoons and evenings.—ST. PETER'S HOSPITAL, Henrietta-street, W.C. Course in Urology for advanced Post-graduates; all day.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W. Lecture-demonstration on Anginal Pain, at 2.30 P.M., on Tues., by Dr. A. E. Clark-Kennedy.—PANEL OF TEACHERS. Individual clinics in various branches of medicine and surgery are available daily. Courses of instruction, clinics, &c., arranged by the Fellowship of Medicine are open only to Members and Associates.

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.
THURSDAY, May 17th.—4.30 P.M., Dr. E. Mapother: Prevention of Mental Diseases.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY AND RESEARCH, Paddington, W.
THURSDAY, May 17th.—5 P.M., Prof. J. C. Drummond: Vitamins in Relation to Present Day Problems of Public Health.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, May 16th.—4.30 P.M., Mr. Stanford Cade: Radium in Malignant Disease of the Urinary Tract.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
MONDAY, May 14th.—5 P.M., Dr. R. T. Brain: Rodent Ulcer.
WEDNESDAY.—5 P.M., Dr. I. Muende: Essentials of the Pathology of the Skin.

UNIVERSITY OF BIRMINGHAM.
TUESDAY, May 15th.—3.30 to 5 P.M. (at the General Hospital), Mr. A. B. Danby: Pelvic Inflammations of Women.
WEDNESDAY.—4 P.M. (in the Lecture Theatre of the Medical Faculty Buildings), Prof. J. B. S. Haldane: Contributions of Genetics to Medical Science. Second of three lectures.
THURSDAY.—4 P.M. (in the Medical Theatre), Dr. H. Guy Dain: Regulations appertaining to National Insurance Practice (first of two lectures).
FRIDAY.—3.30 to 5 P.M. (at the Queen's Hospital), Prof. Wm. Gemmill: Surgery of the Sympathetic Nervous System.

LEEDS GENERAL INFIRMARY.
TUESDAY, May 15th.—3.30 P.M., Dr. MacAdam: Demonstration of Medical Cases.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, May 15th.—4.15 P.M., Dr. R. S. Paterson: Radiological Investigation of the Spinal Column with special reference to Compensation Work.

GLASGOW POST-GRADUATE LECTURES.
WEDNESDAY, May 16th.—4.15 P.M. (at the Royal Infirmary), Dr. A. M. Crawford: Medical Cases.

Appointments

FARRINGTON, GORDON, M.B. Lond., has been appointed Resident Medical Officer, London Lock Hospital.
FRANKLIN, JOHN L., M.D. Camb., M.R.C.P. Lond., Assistant Physician for Diseases of the Skin, Westminster Hospital.
Certifying Surgeons under the Factory and Workshop Acts: KINGSLEY, A. P., B.M., B.Ch. Oxon. (Burton Latimer, Northampton), and PENMAN, F. V. G., M.B., Ch.B. Glasg. (Dukinfield, Cheshire).

Vacancies

For further information refer to the advertisement columns

All Saints' Hospital for Genito-Urinary Diseases, Austral-street, St. George's-road, S.E.—Res. H.S. At rate of £100.
Ashton-under-Lyne, District Infirmary.—Asst. Radiologist. £300.
Barnsley, Beckett Hospital and Dispensary.—Res. Surg. O. £300.
Bedford County Hospital.—First and Second H.S.'s. At rate of £165 and £140 respectively.
Belgrave Hospital for Children, Clapham-road, S.W.—H.S. At rate of £100.
Birmingham Children's Hospital.—Res. Surg. O., Asst. Res. M.O. £175 and £125 respectively. Also H.P., H.S., and Cas. H.S. Each at rate of £75–£100.
Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.
Bristol City and County.—Asst. M.O.H. £500.
Bristol Dispensary.—Two M.O.'s.
Burton-on-Trent General Infirmary.—Cas. O. and H.P. £150.
Cardiff, King Edward VII. Welsh National Memorial Association. H.P. for Glan Ely Hospital. £100.
City of London Maternity Hospital, City-road, E.C.—Asst. Res. M.O. At rate of £80.
Dewsbury and District General Infirmary.—H.S. £150.
Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. £150.
Edinburgh City.—Clin. M.O. for Venereal Diseases Scheme. £750.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Jun. Asst. Path. £250. Also H.P., three H.S.'s, and Obstet. Asst. Each at rate of £50. Also Jun. Obstet. Surgeon.
Evelina Hospital for Sick Children, Southwark, S.E.—H.P. At rate of £120.
Fareham, Hants, Knowle Mental Hospital.—Asst. M.O. £550.
Glasgow, Lightburn Joint Hospital, Shettleston.—Res. Phys. £375.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Director of Radiological Dept.
Hospital for Sick Children, Great Ormond-street, W.C.—H.P. and H.S. Each at rate of £100.
Ilford, King George Hospital.—Deputy Res. M.O. £200. Also H.S. £100.
Italian Hospital, Queen-square, W.C.—H.S. At rate of £100.
Lancaster Royal Infirmary.—Jun. H.S. £130.
Lewisham Hospital, High-street, Lewisham, S.E.—H.P. At rate of £80.
Liverpool Eye, Ear and Throat Infirmary, Myrtle-street.—Hon. Ophth. Surgeon.
Liverpool, Royal Southern Hospital.—Hon. Asst. Gynæcologist and Hon. Laryngologist.
Llanelly and District Hospital.—H.S. £150.
L.C.C.—Temp. Visiting M.O. At rate of £100.
London Hospital, E.—Asst. Director of Medical Unit.
London Fever Hospital, Liverpool-road, N.—Two Asst. Phys.
London Jewish Hospital, Stepney-green, E.—Out-patient Asst. £125.
Manchester and Salford Hospital for Skin Diseases.—Asst. M.O. £100.
Miller General Hospital, Greenwich-road, S.E.—Cas. O. and Out-patient O. Each at rate of £150. Also H.P. and H.S. Each at rate of £100.
Oswestry, Robert Jones and Agnes Hunt Orthopædic Hospital.—H.S. At rate of £200.
Preston and County of Lancaster Royal Infirmary.—H.S. £150.
Queen's Hospital for Children, Hackney-road, E.—Surgeon to Ear, Nose and Throat Dept.
Reading, Royal Berkshire Hospital.—Res. Anæsthetist. At rate of £150.
Rochester, St. Bartholomew's Hospital.—Res. Surg. O. At rate of £225.
Rotherham Hospital.—H.P. £180.
Royal Northern Hospital, Holloway, N.—Res. M.O. £370. Also Clin. Asst. for Dermatological Dept.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon Physician.
St. Albans, Hill End Hospital for Mental and Nervous Disorders.—H.P. At rate of £200.
St. Giles' Hospital, Brunswick-square, Camberwell, S.E.—Asst. M.O. £350.
St. Helen's Hospital.—Jun. H.S. £150.
St. Mary Abbots Hospital, Marloes-road, Kensington, W.—Asst. M.O. £250.
St. Mary's Hospital, W.—Cas. H.S. At rate of £100.
Salford Royal Hospital.—Two H.S.'s. At rate of £125.
Sheffield Children's Hospital.—H.P. At rate of £100.
Sheffield, Jessop Hospital for Women.—H.S. to Maternity Dept. At rate of £120.
Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £150.
West London Hospital, Hammersmith-road, W.—Hon. Dermatologist. Also Hon. Asst. Anæsthetist.
Wolverhampton Royal Hospital.—H.S. Also H.S. to Ear, Throat and Nose Dept. Each at rate of £100.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Lesmahagow, Lanark.

Births, Marriages, and Deaths

BIRTHS

BATEY.—On May 2nd, at 64, Holland-park, W., the wife of Maurice Batey, L.D.S. R.C.S. Eng., of a son.
TAYLOR-YOUNG.—On May 3rd, at The Red House, Park-lane, Salisbury, the wife of H. S. Taylor-Young, F.R.C.S., of a son.

MARRIAGES

BRANDON—MITCHELL.—On April 30th, in St. Giles' Cathedral, Edinburgh, William J. M. Brandon, F.R.C.S. Eng., to Grizel M. J., youngest daughter of the late J. C. Mitchell, M.B., D.Sc., Johannesburg, and Mrs. Mitchell, Sundial, Gilmerton, Midlothian.

DEATHS

EVANS.—On May 3rd in London, Idris David Evans, M.D., B.S., Barrister-at-Law, Deputy-Coroner for Central London.
KIRK.—On May 3rd, at Southgate, N.14, James Kirk, M.D. (late of Straits Settlements and Bridlington), in his sixty-seventh year.
MCCLURE.—On May 3rd, James Campbell McClure, M.D., Chevalier de la Légion d'Honneur, of 65, Wimpole-street, W.1.
TIMMS.—On May 5th, the result of an accident, Samuel Day Timms, L.D.S. R.C.S. Eng.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE THYROID AND LYMPHATIC LEUKÆMIA

THE striking resemblance between the symptoms of hyperthyroidism and of those of chronic lymphadenosis was noted originally in 1924 by G. R. Minot and J. H. Means. Irritability, agitation, hyperactivity, asthenia, increased sweating, and loss in weight, associated with a warm moist skin, a rapid pulse, and fine tremor of the hands, are found in both diseases. In both there is a raised basal metabolic rate, and improvement in both may result from treatment with Lugol's iodine solution. Dameshek, Berlin, and Blumgart have now reported (New Eng. Jour. Med., April 5th, 1934, p. 723) a case of "aleukæmic lymphatic leukæmia" in which apparent recovery followed complete thyroidectomy. The patient was a woman of 42; her spleen occupied almost the entire left half of the abdomen and the glands were also enlarged. The total white cell count was at its maximum 10,000 per c.mm.; the percentage of lymphocytes, most of which were of the immature type, was about 60; and there were about 20 per cent. of blast cells thought to be lymphoblasts. The basal metabolic rate was constantly in the neighbourhood of plus 60. Treatment with X rays and iodine was without effect, but after thyroidectomy the basal metabolic rate immediately fell to normal levels, and the clinical signs and symptoms of hypermetabolism disappeared. The lymph glands and spleen regressed about 90 per cent. from their original size, and all immature cells disappeared from the peripheral blood. The patient said she felt "wonderfully well." The authors recognise that remissions have frequently been reported in lymphatic leukæmia and that the effects recorded here may merely be due to such a remission, but the rapid onset of improvement after operation suggests that thyroidectomy was at least partly responsible.

Those in search of other references to this relationship will find the relevant observations briefly set out in a paper on the influence of the endocrine system in blood disorders by Dr. Douglas Hubble published in our issue of July 15th last year. Hubble concludes that it is a reasonable working hypothesis that the thyroid gland is disordered in chronic lymphatic leukæmia. "This is an assumption," he adds, "which, notably by Friedgood's research, has been brought to the edge of certainty."

NESTS FOR NON-PREGNANT RABBITS

THE private life of the rabbit, like that of Henry VIII, has been known to excite unfavourable comment, but Mr. C. W. Bellerby[1] has recently described a naïve and charming practice of the normal œstrous doe which may be considered creditable. Shortly before parturition the captive pregnant rabbit makes a nest by plucking fur from her breast, abdomen, and flanks and using it to line a hollow in a corner of the cage. Mr. Bellerby, whose laboratory in the department of social biology of University College, London, maintained a colony of 90 isolated, unmated, female rabbits, observed that during the spring the fond creatures were frequently making nests. Pseudo-pregnancy is not unknown in isolated does as a result of spontaneous ovulation, and he thought at first that this phenomenon must be occurring unusually often, but the results of a few post-mortems convinced him that this was not so. He began to watch his rabbits closely: "cages were scrutinised with the utmost care first thing every morning, any nest found being removed after examination." He began his investigation on April 1st, 1932, and narrowly escaped closing it on the same historic anniversary by ceasing observations at midnight on March 31st, 1933.

Among ten animals killed at different times during the year, pseudo-pregnancy occurred in only one, so that clearly most of the does had not even this much excuse for their behaviour. By far the greatest number of nests were made in the spring and none at all in the cold months. Hysterectomy did not check their activities; indeed not only was nesting more frequent in a series of 15 hysterectonised rabbits, but successive nest building by the same doe occurred far more often. About half the normal œstrus females practised nest building. No ovariectomised animal was seen to make a nest, so that ovarian secretion appears to be essential to their development of this instinct; this would account for the seasonal variation, because ovarian activity in the rabbit is greatest in the spring. Hysterectomy has been shown in the rabbit and guinea-pig to prolong the life of the corpus luteum of pseudo-pregnancy; Mr. Bellerby thinks it possible that hyperactivity of the ovary may follow hysterectomy, rendering the doe more sensitive to the stimuli, whatever they are, which provoke nest-building. There is something touching about the whole picture; presumably if Mr. Bellerby's does were human they would run a creche. We learn anyway that "these observations are entirely in accordance with the work of Weisner and Sheard (1933), who have found that maternal behaviour in the rat is not necessarily dependent on the formation of the corpus luteum."

[1] A Type of Maternal Behaviour in the Normal Œstrous Female Rabbit. By C. W. Bellerby, Quart. Jour. Physiol., 1934, xxiv., 77.

LEWIS'S CATALOGUE OF BOOKS

WE have received from H. K. Lewis and Co., Ltd. (136, Gower-street, London, W.C.1), a second supplement to the catalogue of their Medical and Scientific Lending Library. This covers the years 1931 to 1933 (Price 2s.; to subscribers 1s.), and along with the first supplement (1928–30) forms a complete guide to the books in the library and incidentally a useful index to contemporary medical literature. For this purpose the value is greatly enhanced by a classified index of subjects, with the names of those authors who have written upon them. The catalogue is a further instalment of the firm's intention, expressed at the opening of their new building three years ago, to make the pathway between the producers and the consumers of books as smooth, as easy, and as inexpensive as possible. The catalogue bound up with both supplements is priced at 16s. (to subscribers 8s.).

VETERINARY SURGEONS

THE Register of Veterinary Surgeons for 1934 which has just reached us from the Royal College of Veterinary Surgeons (10, Red Lion-square, W.C.1, price five shillings), contains the names of 3379 members, a decrease of 14 on the number for the previous year. The number of students who presented themselves for examination at the College during the year was 898, of whom 57 per cent. satisfied the examiners, and there were 664 individual students examined in the year as compared with 488 in the previous year. The Register contains amongst other things a copy of the by-laws including the provisions of the supplemental charter of May 18th, 1932, which gave the College power to institute new post-graduate diplomas in tropical veterinary medicine and other branches of veterinary science, but in future years a separate volume is to be issued containing the Register only. The standard of production has vastly improved of recent years, and the Register as now issued is pleasing in form and substance.

DEMONSTRATIONS OF CONTRACEPTIVE TECHNIQUE.—On May 16th, at 2.30 P.M., a demonstration will be given by Mrs. Marie Stopes, D.Sc., and Dr. Evelyn Fisher, at the Clinic for Constructive Birth Control, 108, Whitfield-street, London, W. Application for tickets (which will be supplied to medical practitioners only) should be made n writing to t he hon. secretary at the clinic.